

## Anatomy

### The Umbilicus

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In the latter part of the Byzantine period there arose a sect of Christians who came to be known as the Hesychastes or Umbilicani, because in meditating they gazed upon the umbilicus; by so doing it was said that the mind was released from the body and enabled to pass to a higher plane. This means of concentrating was, of course, not peculiar to this group but was then, and still is, commonly practised by most mystics of the East, especially those who pursue the cult of Yogi. It is recorded<sup>1</sup> that an early teacher instructed members of the group as follows: "When thou art alone in thy cell shut thy door, and seat thyself in a corner; raise thy mind above all things vain and transitory; recline thy beard and chin on thy breast; turn thine eyes and thy thought towards the middle of thy belly, the region of the navel, and search the place of the heart, the seat of the soul. At first all will be dark and comfortless; but if thou persevere day and night, thou wilt feel an ineffable joy; and no sooner has the soul discovered the place of the heart than it is involved in a mystic and ethereal light."

For a few moments let us follow the practice of the Hesychastes and turn our thoughts to the umbilicus; while we may not transcend spiritually, we should find much there to interest us materially.

#### Etymology

Something might first be said regarding the origins of the three terms used to denote the scar which marks the point of attachment of the umbilical cord to the abdominal wall of the fetus, namely, "omphalos," "umbilicus," and "navel."

The Greek word "omphalos" is probably the oldest of the three and will be considered first; it had two meanings: (i) the projecting central hub of a shield; (ii) the navel. How the term came to have both these meanings is not hard to understand; but which of these meanings is the older is uncertain.

It may be recalled that in Delphi, the spiritual centre of Ancient Greece, there was a cone-shaped stone known as the "omphalos" which had much significance in the religious practices of the day<sup>2</sup>. There are two stories regarding its origin: (i) it is said that Apollo, shortly after his birth on the Island of Delos, was suddenly transported to Delphi where, after killing a monster which had been troubling the place, he shed his umbilical

cord; (ii) that Zeus, in order to determine the centre of the earth, liberated two eagles, one from the East, the other from the West, and that the birds, flying towards one another, met over Delphi. The "omphalos" could therefore commemorate either of these events although more support might be given to the latter story by the fact that the stone was said to be flanked by two eagles fashioned in gold. Some accounts say that there was an opening in the "omphalos" through which vapours issued, probably from burning herbs, which were inhaled by the Pythia as she uttered her prophecies. A few statues of Asklepius show him with his left foot resting on a miniature copy of the "omphalos." Before leaving this word it might be recalled that Greek midwives were known as "omphalotomoi" or navel-cutters.

The Latin term "umbilicus" is said to be a diminutive form of "umbo," the boss or central elevation of a shield, but it is possible that it came directly from the Greek word, "omphalos." Just as Delphi had an "omphalos," Rome had an "umbilicus"; the "Umbilicus Romae" was a small pillar raised in the time of Severus to mark the centre of the City; it stood near the Rostra of the Forum.

In the English-speaking world, "navel" was commonly used until the 17th Century<sup>3</sup> after which "umbilicus" generally displaced it in medical literature. The word is derived from the Sanskrit "nabhi," which is also the source of the English word "nave," meaning the central block of a wheel or hub. An archaic use of the term "navel" is given in Milton's, "within the navel of this hideous wood."

The idea common to all three terms is that of a central projecting structure or point.

#### Embryology

By the end of the second week of development the embryo is attached to the wall of the chorionic vesicle by a mass of primitive mesoderm known as the bodystalk. In this stalk, and in the walls of the yolk-sac, blood vessels make their appearance during the third week; eventually the two systems link up with each other and with vessels forming in the chorion; in this way a primitive circulation is established between the embryo and the chorion. By the fifth week the amniotic sac, in which the embryo lies, has expanded to such an extent that it compresses the remains of the yolk-sac into the body-stalk, enclosing both these structures in an amniotic tube; in this way the umbilical cord is formed. The cord, at this stage, consists of a tube of amnion within which lie

Wharton's Jelly (derived from the original body-stalk), the vitello-intestinal duct (the remains of the yolk-sac stalk), the distal portion of the allantois (the proximal portion of which is continuous with the bladder eventually), two umbilical arteries, two umbilical veins, and a few small clefts which are the last vestiges of the extra-embryonic coelom. In the sixth week, the general appearance of the cord is much the same but, due to the marked enlargement of the liver and the consequent reduction in space available in the abdominal cavity, the mid-gut loop herniates out into the cord for a variable distance. This herniation persists until the tenth week when the mid-gut loop derivatives are returned to the abdominal cavity; should they remain in the umbilical cord after this period, the resulting condition is referred to as "exomphalos." By the time the gut returns to the abdominal cavity, the right umbilical vein has disappeared.

At birth the cord contains two arteries, one vein, and usually the remains of the distal part of the allantois. All the structures of the cord, with the exception of its amniotic sheath, traverse the umbilical ring, a portal of vital importance to the embryo, and the site of the future umbilicus. Interference with the structures traversing the umbilical ring has serious consequences for the embryo or fetus; for example, one case has been observed by the writer in which the herniated bowel in an exomphalos so compressed the umbilical vein that fetal death resulted. In addition to the above-mentioned structures which pass through the umbilical ring there are sometimes the remains of the vitelline vessels which originally extend from the aorta to the yolk-sac. While these may not infrequently be seen in older fetuses, running from the mesentery of the small bowel to the umbilicus, they usually disappear before birth. The umbilical ring is placed in the mid-line in the linea alba and is flanked by the rectus muscles and their sheaths; being an opening, it constitutes a weak spot in the anterior abdominal wall; the umbilicus, formed after the separation of the cord-stump following birth, continues to display this weakness.

#### Separation of the Umbilical Cord

It is current practice, following the birth of a child, to tie or clamp the umbilical cord at two points and sever it between them; later, a ligature or ligatures may be applied closer to the abdominal wall and the cord stump shortened so that its separation will not be unduly prolonged. The cord is tied, of course, to prevent haemorrhage from the cut ends of the umbilical vessels, but whether ligation is really necessary to attain this end, has, at times, been a matter of controversy; occasionally a voice, sometimes from the wilderness, cries that it isn't. An interesting discussion<sup>1, 5</sup> on this topic was stimulated by Price (1944)

who observed that, in certain native tribes of the Belgian Congo who never practised ligation following severance of the cord at birth, haemorrhage from the cut umbilical vessels was unknown. Many native races in other parts of the world do likewise, and among them death of a new-born from haemorrhage is very rare. Again, in the animal world it is often the custom for the mother to bite through the cord to separate the new-born from the placenta; in other cases, where the cord is short and the animal born while the mother is in a standing position, the cord is torn as the new-born drops to the ground. Death from umbilical haemorrhage is apparently very rare in animals; the horse is said to be an exception.

The reason for the lack of bleeding from the cut ends of the umbilical vessels in these cases is considered to be due to a "closing mechanism" both in the umbilical arteries and vein, associated with the ability of these vessels to retract in the direction of their long axes.

It has been suggested that closure of the arteries is aided by the projection into their lumina of obliquely coursing ridges composed of muscle fibres, usually placed between the internal elastic lamina and the endothelium, the so-called "sub-endothelial cushions." This arrangement is particularly well developed in the intra-abdominal portions of the vessels and at the umbilical ring<sup>6</sup>; they are also found in the extra-abdominal portions of the arteries but are there usually less well developed. They form no particular pattern on the vessel wall but usually follow an oblique, sometimes spiral, course, merging and separating in an irregular manner. As a result of these ridges the lumen of the artery is able to undergo marked alterations in calibre; from complete and effective closure, when the cushions are pressed hard against one another by the contraction of the circular muscle fibres of the tunica media, to full dilatation, when the cushions become virtually flattened against the vessel wall. Such a mechanism is particularly useful in a vessel which may be called upon to carry varying quantities of blood and to undergo marked changes of calibre in consequence. This type of mechanism is not, however, confined to the umbilical arteries; it has also been described in the ductus arteriosus, and in the ovarian, uterine, penile, and other arteries. Although the walls of the intra-abdominal portions of the umbilical arteries are said to contain nerves, it seems that the stimulus causing contraction of the cushions is of chemical, rather than nervous origin. It has been shown that the umbilical arteries will close if the oxygen content of the blood traversing them is increased and that they will dilate if it is decreased<sup>7, 8</sup>. Up to the time of birth the umbilical arteries transmit blood which is relatively poor in oxygen but rich in carbon dioxide; following the first breath, however, the

umbilical arteries convey, for the first time, blood which has a relatively high oxygen content; this chemical change apparently stimulates contraction of the muscular cushions, so that the lumen is obliterated; closure is also aided by retraction produced by the oblique and longitudinal muscle fibres of the vessel wall.

Less is known about the closure of the umbilical vein at birth. A sphincter has been described at the junction of the left branch of the portal vein and the ductus venosus<sup>9</sup>; it is said to close shortly after birth, so that blood from the umbilical vein can no longer enter the ductus. It seems, however, that another closing mechanism must also be present in the vein, for a sphincter in the ductus venosus would be unable to prevent the back-flow of blood from the portal system along the umbilical vein. The arrangement of the muscle fibres in the wall of the vein in the vicinity of the umbilical ring suggests that this is a likely position of such a mechanism<sup>10</sup>; projections, not unlike the sub-endothelial cushions of the arteries, are found in this region; also, in some specimens the umbilical vein herein undergoes a hair-pin bend and the arrangement of its circular muscle fibres is such that their contraction could effectively obliterate both limbs of the channel.

Closure of both umbilical arteries and vein is never complete, lakes of blood being left at various points in their course. It is possible, too, that the vessels may later relax but by such a time the blood in the lumen has clotted so that haemorrhage should not ensue; this safeguard, however, cannot always be relied upon. After several months the remnants of the umbilical vessels are converted into fibrous cords. The sloughing of the cord at the umbilical ring results in the formation of a fibrous tissue plug, the navel.

It is by means of such mechanisms that haemorrhage is prevented, in certain cases when the cord is cut or torn but not ligated.

The efficacy of an individual's closing mechanism, however, apparently depends to some extent on the race to which he belongs. Generally, the more primitive the race, the more effective the mechanism, possibly because, if ligation of the cord is never practised, a race is ultimately evolved in which only those with an effective closing mechanism survive. In the more highly civilized races, on the other hand, in which ligation or some similar procedure is regularly practised, the risk of haemorrhage from the cut end of the untied cord is very real.

Rachmanow<sup>11</sup> (1914) observed the effects of not tying the severed ends of the umbilical cords of 10,000 new-borns in the Moscow State Hospitals; his results showed that in 17% of the infants the cord-stump had to be ligated eventually, in order to control haemorrhage.

It would appear that the safest procedure is therefore to tie or clamp the cord in every case.

It may be of interest to note at this point that ligation of the cord is not peculiar to civilized races but is practised by some of the most primitive; for example, certain groups of Australian aborigines, said to be among the most backward races in the world, practise ligation. The practice of ligation seems in no way related to the intelligence or degree of civilization attained by the race<sup>12</sup>.

#### Alternatives to Ligation; Methods of Severing

While it is usual for us to cut the cord with some fairly sharp instrument, most of the less civilized races sever the cord either by biting or cutting with a blunt instrument; in some races it is the custom to keep for this purpose a special blunt wooden knife<sup>12</sup>. It is considered, probably correctly, that such treatment reduces the incidence of haemorrhage since the vessels are torn rather than cut. It is for this reason that some obstetricians prefer cutting the cord with scissors rather than a knife.

After the cord is cut some races do nothing more, others tie the cord-stump, while others, again, ensure haemostasis either by knotting the cord, or by twisting it in the same direction many times.

#### Treatment of the Cord-Stump

In order that the cord-stump will be shed as soon as possible, it is customary to keep it dry by the use of absorbent powder and dressings. Primitive races frequently anoint the cord stump with aromatic powder, dust, cow-dung, astringents, ointments or ashes, but their reason for doing so is more often magical than medical.

A practice of the natives of the Loango Coast, in Africa, is perhaps worth noting. It is said that after a child is born the women of the village can bring about the separation of the cord-stump within 24 hours by taking turns of placing their heated hands on it. Some other races are more drastic in their methods and burn the cord-stump off<sup>12</sup>.

Regarding the rapid drying of the cord-stump it should be recalled that the shrinkage of Wharton's Jelly may result in the loosening of the ligature, when such has been applied, and secondary haemorrhage may ensue if closure of the umbilical vessels is incomplete.

Usually the cord-stump separates between the fourth and ninth days, most frequently on the sixth day, a reddish granulating area remaining which becomes the navel<sup>13</sup>.

Variations, however, in the time of separation of the cord or the cord-stump are on record. Separation of the cord before birth has been recorded by both Sydenham<sup>14</sup> (1950) and Duff<sup>15</sup> (1950); in the former's case it was considered that



separation had probably occurred about three weeks prior to delivery. A case of delayed separation of the cord has been recorded by Murray<sup>16</sup> (1950); the first signs of separation were not evident until the 27th day after birth, complete separation not occurring until the 33rd day.

### Anatomy

(1) **Form:** The appearance of the umbilicus in the infant can be classified as follows:

(i) **Normal**—where the amnion of the cord has met the skin of the anterior abdominal wall at right angles and does not actually constitute part of the anterior abdominal wall. (ii) **Amniotic**—in this type the amnion has extended from the cord base for a variable distance centrifugally to meet the skin of the anterior abdominal wall; following the separation of the cord-stump the ulcerated area left, heals by granulation and a flat scar results. (iii) **Cutaneous**—the skin of the anterior abdominal wall has extended outwards for a variable distance along the umbilical cord. In this type, after the cord-stump separates, a skin-covered protrusion remains which may be confused with a hernia; of course, the two conditions may actually co-exist. Generally, this projection diminishes in size as the child grows older.

In the adult, due to contraction of the scar tissue which forms the bulk of its substance, the umbilicus usually becomes a circular or slit-like depression; in the latter case the slit may be mainly vertical or horizontal in direction. Sometimes within the depression, especially in the circular form, there is a small knob-like projection of skin; this type would appear to be exemplified by that of the damsel in the "Song of Songs" recounted in the Old Testament.

Bert and Viannay<sup>17</sup> give the following incidence of umbilical types as a result of studying 112 cases; circular—26%; horizontal fissure—63.3%; vertical fissure—10.7%.

(2) **Position:** In the child of about eighteen months the umbilicus lies midway between the vertex and the heels; prior to this age it lies below the mid-point of the body, after this age, above. In the normal adult it ordinarily lies on a level with the inter-vertebral disc between the 3rd and 4th lumbar vertebrae.

(3) **Blood Supply:** Arterial supply is through the intercostal vessels and the superior and inferior epigastrics; venous drainage is into the corresponding veins.

Not infrequently there is anastomosis between the veins of the anterior abdominal wall and the portal system through para-umbilical veins in the ligamentum teres.

(4) **Lymphatic Drainage:** Lymph from the superficial part of the navel passes mainly to the superficial inguinal and axillary lymph nodes; from the deep aspect, lymphatic channels pass to

mediastinal, posterior abdominal and pelvic lymph nodes.

(5) **Nerve Supply:** The umbilicus is generally considered to be supplied by the tenth thoracic nerves of both sides; some writers, however, favour supply by the ninth segment alone or in addition to the tenth.

(6) **Immediate Relations:** Situated in the linea alba, the umbilicus is flanked by the recti abdomini and their sheaths. Attached to its deep aspect superiorly, is the ligamentum teres; inferiorly, it is joined by the lateral and median umbilical ligaments, the remains of the umbilical arteries and of the allantois (urachus) respectively. As previously mentioned, occasionally a thin strand, the remains of the vitelline vessels, passes from the mesentery of the small intestine to the navel, but ordinarily this has disappeared by the time of birth. Posterior to it lie the fascia transversalis, the parietal peritoneum, the peritoneal cavity, the greater omentum and varying parts of the intestine.

### Clinical Considerations

(1) **Absence:** While it is unlikely that the umbilicus is ever absent in the strict sense of the word, unless as the result of operative procedure, it may be incomplete or insignificant in certain cases of ectopia vesicae, where it is placed at the apex of the raw exposed bladder area.

(2) **Variations in Form:** During the first trimester of pregnancy the umbilicus may be indrawn; in the last trimester, everted. Prominence of the umbilicus may be a feature of almost any condition in which there is abdominal enlargement; for example, in ascites, enlargement of spleen, liver, et cetera. Prominence of the navel, however, should not be confused with the "cutaneous umbilicus" occasionally seen in infancy; prominence resulting from tumor, hernia or cyst will be considered in later sections.

(3) **Variations in Position:** In visceroptosis, the umbilicus may occupy a lower position than usual. In achondroplasiae the umbilicus retains its infantile position and lies below the midpoint between the vertex and the heels. As a result of paralysis of the muscles of the anterior abdominal wall the umbilicus may occupy a higher, lower, or more lateral position than usual, although such a variation may only be apparent when the abdominal reflexes are tested. In hemiplegia, testing of the abdominal reflexes may result in the deviation of the umbilicus towards the unaffected side (Beevor's Sign). Partial paralysis of the abdominal musculature may be detected if the patient attempts to rise from the supine position without the use of the arms; if the muscles of the upper part of the anterior abdominal wall are affected, the umbilicus will be pulled downwards, while if the lower muscles are paralyzed, the umbilicus



will move upwards.

(4) **Coloration:** The normal umbilicus usually has the same coloration as the surrounding skin. In certain pathological states, however, it may become tinted as follows: **Blue**—in the late stages of ruptured ectopic gestation (Cullen)<sup>18</sup>; **endometrioma**; **Yellow**—occasionally in pancreatitis (Johnston)<sup>19</sup>; **Green**—sometimes in intraperitoneal rupture of a hydatid cyst or in bile leakage; **Brown**—in pregnancy, the brown pigmentation of the linea nigra, may extend into the region of the navel. Hamilton Bailey<sup>20</sup> wisely advises that before deciding on the colour of the umbilicus, it should first be cleaned with ether.

(5) **Caput Medusae:** In some cases of portal obstruction veins may be seen radiating from the navel, forming the so-called Medusa's head; this appearance, however, is dependent on the existence of the para-umbilical veins which connect the systemic and portal systems.

(6) **Umbilical Pain:** Pain in the umbilicus may be the result of local disturbances or may be referred from other regions. (i) **Local:** from local inflammation, umbilical hernia, tumor metastasis or fistula. (ii) **Referred:** The classical example is the pain which may be present in the early stages of appendicitis and which is dependent on the bilateral innervation of the umbilical region and of the appendix. Other conditions which may result in referred pain in the umbilical region are: acute and chronic obstructions of the small intestine, intussusception, volvulus, carcinoma of the bowel, internal hernia, acute and chronic infections of the peritoneal cavity; less frequently, peptic ulcer and gallbladder disease. In lead poisoning umbilical pain may be the only symptom; similarly in tabes dorsalis.

(7) **Sinuses and fistulae:** Should the vitello-intestinal duct fail to lose its connection with the umbilicus and remain patent, a fistula results through which faecal material may be discharged; in the same way, patency of the urachus (allantoic canal) may result in leakage of urine; both conditions may co-exist. Should only the distal portion of these structures remain patent a sinus is formed which discharges mucus at the umbilicus. Where a sinus or fistula exists, the navel may, for the most part, consist of reddish granulation tissue.

(8) **Discharging Umbilicus:** Occasionally, following the separation of the cord-stump, healing of the raw area is tardy; the result is a reddish mass or polyp of granulation tissue from which a watery fluid exudes, so-called "weeping umbilicus." It has been suggested that this condition is due to the inclusion of epithelium of the vitello-intestinal duct in the umbilical region at the time when the former structure is undergoing degeneration. Sometimes the epithelium of the polyp is gastric in type and the discharge re-

sembles gastric juice. Discharges encountered in fistulae and sinuses have already been mentioned above. It might be recalled, however, that abscesses or other collections of fluid (e.g. bile) in the abdominal cavity, or from the liver, may track to the umbilicus and discharge there. Where there is an endometriomatous deposit, leakage of blood from the umbilicus may occur at the time of the menstrual period.

(9) **Umbilical Hernia:** There are three principal types of umbilical herniae: congenital, infantile, and adult (or acquired). (i) **Congenital:** This type is sometimes known as "hernia of the cord" or "exomphalos," and is present at birth. The gut, and perhaps other abdominal viscera, protrude into the substance of the cord through a widened umbilical ring. The sac wall generally consists of the amniotic wall of the cord, a thin layer of Wharton's Jelly and peritoneum; the umbilical vessels run in the sac wall. In severing the cord there is a danger that the sac contents may be injured. The condition is apparently the result of imperfect formation of the abdominal wall in the region of the navel so that there is persistence of the original herniation of the midgut loop normally found during the sixth to tenth weeks of intra-uterine life. (ii) **Infantile:** This form develops during the first few months of postnatal life, and appears to result either from a preformed sac in the region of the navel, or from the presence of a weakened area of the linea alba just superior to the umbilicus. No doubt the herniation is aided by increased intra-abdominal pressure from coughing or straining. It is said that these herniae frequently undergo spontaneous cure. Binding a coin enclosed in gauze to the umbilical region is thought by some to assist in its reduction. At this juncture it might be stated that, in certain primitive races, protrusion of the navel during childhood and even during adult life is very common; these protrusions are usually considered to be umbilical herniae, but it is not certain that in all cases they are true herniae; sometimes they attain quite a considerable size, although many disappear in later childhood. Cutting of the cord too close or too far from the abdominal wall has been blamed for this occurrence<sup>12</sup>, but it is difficult to see why the latter especially should have any effect on the formation of the umbilical scar. In certain parts of India it is the custom, after the cord has separated, to cover the navel with a piece of copper enclosed in a binder in an attempt to reduce the incidence of such "herniae." (iii) **Adult:** This group is sometimes referred to as the acquired type. The hernia is more often para-umbilical than umbilical in position. It is common in elderly, multiparous women; usually there is herniation of omentum and/or bowel through a weakened area of the linea alba either immediately above or below the

umbilicus.

(10) **New Growths:** The more common primary tumors which may be found in the umbilical region are papilloma, angioma, adenoma (from vitello-intestinal duct remnants), melanoma, and squamous epithelioma. Secondary tumors from carcinoma of stomach, large bowel, liver, ovary or urachus, also endometrioma, are not uncommon.

(11) **Cysts:** Cystic swellings of the umbilical region are usually derived from remnants of the vitello-intestinal duct or allantois (urachus). Dermoid cysts may also occur. Endometriosis may result in a bluish cystic swelling, attributable to the contained blood.

(12) **Horns and Calculi:** The accumulation of desquamated epithelial cells in the concavity of the umbilicus may lead to the formation of a horn or stone-like structure; not infrequently these result in secondary ulceration.

(13) **Other Conditions:** The umbilicus may also be affected by eczema or pruritus; by mycotic or pyogenic infection, moniliasis, or syphilis. Inflammatory conditions of the umbilicus in infancy may result in arthritis or osteomyelitis, if unattended.

One further aspect of omphalology may be referred to, namely:

#### The Umbilicus in Art

It has been stated that in classical art the umbilicus was almost invariably placed at a point four-tenths of the distance between the pubis and the xiphisternum<sup>21</sup>. Today, however, the artist or sculptor usually considers it sufficiently accurate to place the adult umbilicus at about the midpoint of this distance, and since the position of the navel may vary considerably, this working rule seems reasonable enough.

Regarding the shape of the umbilicus, one art manual states<sup>22</sup> that it is "a circular and usually depressed area, with the surrounding skin raised and wrinkled." Now this impression which seems general in art circles, that the umbilicus usually has a circular outline, is interesting, for of course, quite frequently it is a horizontal, oblique, or vertical fissure. Inspection of forty illustrations of famous paintings and statues in which the unclad human form is depicted showed the distribution of umbilical types as follows: (the figures in brackets are those of Bert and Viannay for comparison) circular, 64% (26%); horizontal, 26% (63.3%); vertical, 10% (10.7%). Why the circular type of navel should be so popular with artists is difficult to understand, unless the poet's likening of the umbilicus of the damsel in the "Song of Songs" to "a round goblet which wanteth not liquor" has fired the artistic imagination. Perhaps, however, an omphalologist with a psychological bent will some day furnish a more satisfactory explanation.

One last point: the "umbilicus Adami." Whether or not Adam possessed an umbilicus may seem a

rather unimportant matter to most people, but to an artist it must present quite a problem. Take, for example, Michaelangelo's fresco on the ceiling of the Sistine Chapel in the Vatican in which, among other things, is a pictorial representation of the Creation of Adam. This beautifully executed work shows Adam in a reclining position with left hand outstretched to receive the "Spark of Life" from the Creator; Adam, as far as one can judge, is fully formed; he displays an umbilicus of the horizontal-fissure type. In Pollaiuolo's sketch of Adam, the latter presents the same anatomical details as in Michaelangelo's fresco; indeed, it is possible that Michaelangelo got some inspiration from the former's drawing. What, of course, interests us most is how these gentlemen reached a decision on this matter. What were their grounds for "umbilicating" Adam? Was it an order from the Church or was it entirely their own personal impression? Did they spend hours considering the problem and the possible theological implications of their decision; or did they feel that an abdominal wall devoid of an umbilicus is too unusual, too likely to be ridiculed, too barren and monotonous, too much like a desert without an oasis? On the other hand, it is probable that they never gave the matter a moment's thought.

As we seem in danger of drifting from the material plane, it is perhaps time our meditation ended. It is hoped, nevertheless, that these few thoughts may serve to remind us that the umbilicus, although small in size, is not without its significance.

#### Acknowledgment

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## Cardiology

### Anatomical Diagnosis of Congenital Heart Lesions by Clinical Methods

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Although congenital anomalies of the heart account for only 2% of all cases of organic heart disease, this small group of cases has acquired increased importance in the past decade due to the advances in surgical therapy for congenital cardiac defects.

These advances in our knowledge of congenital heart disease may be fairly ascribed to the introduction of such new techniques as cardiac catheterization, angiocardiology and unipolar lead electrocardiography.

Cardiac catheterization and angiocardiology have been utilized primarily to study physiological and anatomical variations in the congenital heart and thus in many cases to give the diagnosis. However, in so doing, they have fulfilled a second and more important duty—that of giving support to certain simple physical signs by which the accurate diagnosis of congenital heart lesions can be made on clinical grounds alone.

It is the purpose of this paper to point out that although such aids as the two operational techniques mentioned above are pre-operational "musts" in centres where cardiac surgery is being performed; nevertheless, the vast majority of lesions can be diagnosed accurately by our usual clinical methods.

Congenital cardiac anomalies are not hereditary and rarely familial. The majority of them are due to defects in development occurring between the 5th and 8th weeks of foetal life. Some depend upon the persistence of certain parts of the foetal circulation which should become obliterated at birth, and a few appear to be caused by infection in utero or are associated with German measles in the mother. Other congenital abnormalities such as arachnodactyly and mongolism are found in at least 10%. Twins are rarely both affected.

Before going on to a discussion of individual congenital heart lesions, a few general remarks about some of the physical signs of the cardiovascular system as they apply to congenital heart disease will be made.

#### 1. The Pulse:

The pulse is found to be increased in volume in both coarctation and patent ductus arteriosus. In the former this is associated with hypertension and in the latter with a high pulse pressure.

The pulse is found to be small or normal in ventricular and atrial septal defects. It is small

in Fallot's Tetrad and normal in pulmonary stenosis.

In coarctation of the aorta, the femoral pulses are usually diminished in force and of even more diagnostic import they are delayed. Pulsation in the posterior tibial and dorsal arteries of the feet may be absent. In coarctation, again, the majority of the physical signs are provided by the collateral circulation. Pulsation of some of the intercostal arteries can usually be seen and felt posteriorly, especially if the subject bends forward.

#### 2. Neck Veins:

A significant finding in the examination of the jugular venous pulse wave is the presence of exaggerated "A" or auricular waves. These are found when the right auricle is contracting vigorously against a head of pressure in the right ventricle or a resistant tricuspid valve. The three congenital cardiac lesions in which this prominent "A" wave is noted are:

- (a) Pulmonary stenosis.
- (b) Tricuspid atresia
- and to a lesser extent
- (c) the Tetrad.

#### 3. Cyanosis:

Most classifications of Congenital Heart Disease sub-divide the lesions into two groups, viz—cyanotic and acyanotic; thus the importance of looking for and recognizing cyanosis in assisting one in the differential diagnosis of congenital heart lesions. To recognize the cyanosis, however, is not enough. It must be determined whether this is a central or a peripheral cyanosis. Peripheral cyanosis is associated with cold extremities and a small pulse and is found on the exposed parts but not on mucous membranes. Central cyanosis on the other hand is found on mucous membranes as well as exposed parts and is associated with a full pulse, digital pulsation and warm extremities. If difficulty still arises in differentiating the two, an exposed part may be warmed by tapping or rubbing. If cyanosis is peripheral in type it will disappear, whereas central cyanosis will persist. Although the subdivision of cases into cyanotic and acyanotic groups refers to central cyanosis, cases of lone pulmonary stenosis which are classified as acyanotic often show a peripheral cyanosis. If a case of lone pulmonary stenosis shows central cyanosis, this usually means that a high right atrial pressure has opened up a patent foramen ovale with a right-left shunt of blood through the atrial wall defect.

#### 4. The Apex Beat:

The character of the cardiac impulse at the apex of the heart is as important as, if not more important than the actual site.

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In differentiating the right ventricular or "tapping" apex from the thrusting apex of left ventricular enlargement, clinical practice is necessary. In right ventricular enlargement there is usually clockwise rotation of the heart about its vertical axis with the result that the true apex of the left ventricle has rotated posteriorly and is impossible to palpate. What is actually being felt is mitral valve closure.

A right ventricular or "tapping" impulse is felt in

- (a) Atrial septal defect.
- (b) Pulmonary stenosis.
- (c) The Tetrad, and
- (d) Eisenmenger's Complex.

A left ventricular apex is felt in

- (a) Ventricular septal defect.
- (b) Patent ductus.
- (c) Coarctation.
- (d) Sub-aortic stenosis, and
- (e) Tricuspid atresia.

#### 5. Palpation of the Precordium:

Palpation of the precordium will reveal the presence or absence of thrills and their maximum site as well as giving useful information about the right ventricle and the pulmonary outflow tract. The pulsation of an hypertrophied or overfilled right ventricle can be palpated along the left sternal border in the third and fourth left interspaces. Pulsation in the main pulmonary artery can be felt in the second left interspace. A useful diagnostic point in differentiating an atrial septal defect from a case of pulmonary stenosis is based on palpation. In atrial septal defect, both a pulsating right ventricle and a pulsating pulmonary outflow tract may be felt. In pulmonary stenosis on the other hand, a pulsating right ventricle is obvious but there is no pulsation in the second left interspace.

Palpable diastolic shock in the second interspace to the left of the sternum indicates hypertension in the pulmonary arterial system.

#### 6. Heart Sounds:

A careful attention to the character of the second heart sound at the base is of great importance. This sound is normally split but only slightly so, and is recognized on auscultation as a blurred second sound rather than as two distinct components. Wide splitting of the second heart sound usually indicates right bundle branch block and is an almost invariable finding in atrial septal defect.

A split second sound indicates that both pulmonary and aortic valves are functioning and mitigates against the diagnosis of Tetrad or pulmonary stenosis unless the stenosis is infundibular rather than valvular; or is very mild in degree.

#### 7. Murmurs:

A systolic murmur should be regarded as organic if it is louder than Grade III in intensity

and is holosystolic in timing. A diastolic murmur is nearly always organic, but a functional basal diastolic murmur due to pulmonary incompetence is heard in approximately one-third of cases of Atrial Septal Defect. A functional mitral diastolic murmur due to dilatation and rapid filling of the left ventricle is heard in severe cases of ventricular septal defect and patent ductus arteriosus.

Both fluoroscopic examination and the electrocardiograph are useful adjuncts to the above-mentioned physical signs.

Fluoroscopy in the A.P. position with a teleoroentgenogram will show gross cardiac enlargement, and the oblique views will show the individual cardiac chambers. The important differential between an underfilled pulmonary vascular tree (pulmonary oligemia) and an overfilled pulmonary tree (pulmonary plethora) can be made by fluoroscopy. Screening will also reveal conspicuous pulsation of the pulmonary artery known as "hilar dance" in well marked cases of atrial and ventricular septal defect as well as patent ductus arteriosus.

The main importance of the cardiogram in differential diagnosis is to distinguish between cases of left and right ventricular hypertrophy.

And now a few brief remarks about the clinical picture in some of the more common congenital cardiac anomalies.

#### A. Coarctation of the Aorta:

In Doctor Paul Wood's series of two hundred cases of clinically proven congenital hearts, coarctation occurred in eight per cent. These patients may complain of epistaxis, undue throbbing, gnawing pains in the shoulder girdle, chest or back; cold feet and occasionally intermittent claudication.

Hypertension is usually considerable in degree. Femoral pulses are diminished and delayed and the blood pressure in the legs is low. Enlarged, tortuous, pulsating collaterals may usually be seen and felt over the chest wall. The apex is left ventricular in type and a systolic murmur is usually heard over the defect.

Radiography may reveal, (1) an enlarged left ventricle; (2) notching of the inferior borders of the ribs; (3) a "double" or elongated aortic knuckle due to a grossly enlarged left subclavian artery.

The cardiogram reveals left ventricular hypertrophy.

Associated phenomena may produce other signs, i.e. (a) Bicuspid aortic valves (42% of cases) which may lead to aortic incompetence; (b) Patent ductus arteriosus (10%); (c) Berry aneurysm in the circle of Willis.

#### B. Atrial Septal Defect:—17%

These cases accounted for 17% of Doctor Paul Wood's series. They often have no symptoms up until the ages of thirty to forty-five, at which time they commonly go into heart failure.

On examination, these patients exhibit a small or normal peripheral pulse; a normal jugular or venous pressure; palpable pulsation of the pulmonary outflow tract and right ventricle; a pulmonary systolic murmur with or without a thrill; and a widely split second heart sound. About one-third of cases evidence a basal diastolic murmur. The apex is usually tapping in nature, but is occasionally tumultuous due to marked overfilling of the right ventricle.

Fluoroscopy usually reveals gross dilatation and marked pulsation of the pulmonary artery and its branches. Pulmonary plethora is seen. Considerable enlargement of both right auricle and ventricle with hypoplasia of the left ventricle and aorta are shown.

The electrocardiogram is essential to the diagnosis here. Ninety-five per cent of cases show a complete or incomplete right bundle branch block. This is revealed by an R.S.R.<sup>1</sup> complex over the right ventricle.

#### C. Ventricular Septal Defect—Twelve Per Cent:

The majority of these cases have no symptoms. The pulse is small or normal and the jugular venous pressure also normal. The cardiac apex is thrusting or left ventricular. The right ventricle and pulmonary artery can be felt to pulsate. The second heart sound at the pulmonary area is normally split and there is commonly accentuation of the second or pulmonary element of this. A systolic thrill and murmur are nearly always present and are usually situated in the third or fourth left interspaces at the sternal edge. A functional mitral diastolic murmur occurs in one-half the cases and a functional basal diastolic in one-quarter.

X-ray shows pulmonary plethora, dilatation of the pulmonary artery and enlargement of the left ventricle in all but the mildest cases.

The electrocardiogram shows evidence of both right and left ventricular enlargement.

#### D. Patent Ductus Arteriosus—Fourteen Point Five Per Cent:

These patients exhibit a collapsing pulse with a raised pulse pressure. The cardiac apex is left ventricular. The classical machinery murmur which is usually accompanied by a thrill is maximal in the second left interspace. The second heart sound is normally split and the second element accentuated. In severe cases a functional mitral diastolic murmur is heard.

Fluoroscopy shows pulmonary plethora, conspicuous pulsation of the pulmonary artery, hilar dance, enlargement of the left ventricle and fullness of the left auricle.

The cardiogram may be normal or show left ventricular hypertrophy.

#### E. Lone Pulmonary Stenosis—Ten Per Cent:

The stenosis is usually valvular but may be infundibular.

The chief symptoms are progressive breathlessness on exertion and ultimately those of heart failure. Angina pectoris and syncopal attacks may occur in severe cases. Cyanosis, if present, is peripheral in type.

The signs include a normal peripheral pulse, a conspicuous "a" wave in the venous pulse, a high pulmonary systolic murmur and thrill, a single second heart sound and a tapping right ventricular cardiac apex.

X-ray usually shows pulmonary oligemia, post stenotic dilatation of the main trunk of the pulmonary artery, hypoplasia of the aorta and left ventricle, with hypertrophy of the right ventricle.

The E.C.G. often shows right ventricular hypertrophy with tall sharp P waves.

#### F. Fallot's Tetralogy—18%

Cyanosis, polycythemia and clubbing of the fingers develop early in childhood and tend to be progressive. Growth may be stunted. The chief symptom is dyspnea, and the child often adopts a characteristic squatting position in order to obtain maximum comfort.

The peripheral pulse is small, and there may be slight exaggeration of the "a" wave in the venous pulse.

The cardiac impulse is tapping. A systolic murmur is usually heard, and is accompanied by a thrill in one half the cases. This murmur is maximal in the 2nd or 3rd left spaces. The basal 2nd sound is single.

X-ray shows conspicuously clear lung fields (pulmonary oligemia), absence of the normal pulmonary arc and a tilted up cardiac apex in the P.A. view.

The E.C.G. shows right ventricular dominance and often peaked P. waves.

#### G. Eisenmenger Complex

This is very rare. Cyanosis appears later in life, often around the age of puberty. The physical signs include a systolic thrill and murmur maximal in the third left intercostal space, palpable pulsation of the pulmonary artery, accentuation of the second (pulmonary) element of a normally split 2nd heart sound, and occasionally a pulmonary diastolic murmur.

Right ventricular enlargement is often shown radiologically and electrically. There is usually dilatation of the pulmonary artery.

#### Paul Woods Classification of Congenital Heart Disease ACYANOTIC

##### A. NO SHUNT

###### 1. Simple

- a. Dextrocardia
- b. Congenital hypertrophy
- c. Heart block

###### 2. Left Hypertrophy

- a. Coarctation
- b. Congenital Aortic Stenosis
  - sub-valvular
  - valvular
- c. Bicuspid or quadricuspid valve
- d. Bicuspid plus Aortic incompetence

**3. Right Hypertrophy**

- a. Lone. Pulmonary stenosis
  - valvular
  - infundibular
- b. Mild P.S. with V.S.D.
- c. Mild P.S. with A.S.D. or patent F. ovale
- d. P. incompetence from Congenital dilated Pulmonary artery

**B. LEFT TO RIGHT SHUNT (Pulmonary Plethora)**

1. V.S.D.
2. A.S.D.
3. P.D.A.

**CYANOTIC****A. RIGHT TO LEFT SHUNT (Pulmonary Oligemia)****(a) Cyanosis from Birth****1. Right Hypertrophy**

- a. Fallot's tetralogy
  - infundibular
  - valvular
- b. Marked pul. stenosis with V.S.D.
- c. Marked pul. stenosis with A.S.D. or patent foramen ovale
- d. Persistent truncus arteriosus

**2. Left Hypertrophy**

- a. Pulmonary atresia with septal defects
- b. Tricuspid atresia with septal defects

**N.B.**—Both these have non-functioning R. Vent.

**(b) Late Cyanosis**

1. Eisenmenger's complex
2. Moderate P.S. with septal defect

**B. LEFT TO RIGHT SHUNT**

1. Transposition of great vessels with A.S.D., V.S.D. or patent foramen ovale.

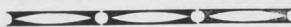
**Summary**

A brief account of the simple physical findings which may assist in the anatomical diagnosis of congenital heart lesions has been presented, with a description of some of the commoner lesions. Emphasis has been placed on the fact that the majority of congenital cardiac defects can be diagnosed accurately anatomically by clinical means alone.

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1. Wood, P., Congenital Heart Disease (St. Cyr's Lecture), British M.J., 639, Sept. 16, 693, Sept. 23, 1950.
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## Cancer



### Carcinoma of the Cervix

Reported by D. W. Penner, M.D.

Recently a committee has been appointed by the Department of Obstetrics and Gynecology of the Winnipeg General Hospital to consider means of improving the treatment of cancer of the uterine cervix.

The committee has drawn up the following list of what they consider to be minimal requirements in the investigation of such cases. These are as follows:

1. History and general physical examination.
2. Careful pelvic examination, including visual examination of the cervix.
3. Biopsy (curettage and/or vaginal smears when indicated) to show grade and type of tumor.
4. Rectal examination to show stage of disease.
5. Urinalysis (intravenous pyelogram and/or cystoscopy when indicated).
6. Weight, full blood count (smears and cultures in infected cases).
7. Consultation with pathologist, radiologists and radiation physicist.
8. A written record of what the patient should be or has been told about her disease.

In addition a basic plan of radiation treatment has been made, although it is recognized that treatment must be varied in individual cases.

Generally speaking treatment would be started by two applications of radium, a week apart, and followed by X-ray therapy during the next four weeks. Patients would be hospitalized for radium but not for X-ray treatment. The complete course would last approximately six weeks.

Exact details of radium and X-ray treatment would be worked out in each case, an attempt being made to deliver a lethal tumor dose to the

whole of the true pelvis. Particularly, an effort would be made to give a high dose to the parametria, right out to the lateral pelvic walls, without overdosage to the paracervical triangles, bladder or rectum. Adequate dosage to the cervix is a relatively simple problem.

In order to measure radium dosage accurately, X-ray films of each radium application would be necessary. This dose would be expressed in gamma roentgens at certain points of the pelvis in a certain period of time.

In infected cases, or in cases where the tumor is bulky and accurate application of radium impossible, the above plan might be reversed, the X-ray treatment being given first and radium afterwards.

Some new instruments are being made to facilitate the application of radium and a lead table and other devices installed to protect operating room personnel from radium emanations.

A patient with carcinoma of the cervix, in contrast to many other visceral cancers, can be offered a relatively high cure rate. In other words reasonable efforts on the part of the doctor produces reasonable returns to the patient. It is obvious that not all cases when first seen are curable with present day methods, but an analysis of the failures shows that a number, when first treated, were in the curable group. This points to the need for improvement of our treatment. Any improvement made which will result in a higher salvage in cases of cervical carcinoma is to be commended. It is hoped that the Medical profession will avail themselves of the freely offered services as outlined by the committee in all cases of carcinoma of the cervix. Organized co-operation can produce a lower death rate from cervical carcinoma.



## Obstetrics

### The Physiology of Reproduction The Endocrine Glands and Their Secretions

From the Faculty of Post-Graduate Studies of the Winnipeg  
General Hospital in the Department of Obstetrics and  
Gynaecology.

Section, "B" No. 4

#### The Uterus and Fallopian Tubes

J. C. McCawley, M.D.

Today the topic for discussion is the uterus and fallopian tubes, their gross and microscopic structure, their blood supply, lymphatic drainage, development and congenital anomalies.

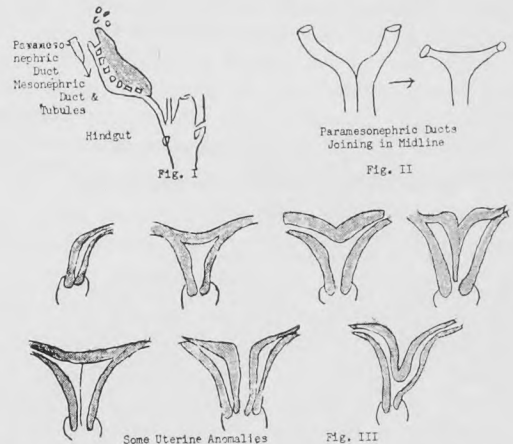
First of all let us trace the development of these structures. Since the previous presentations have described in moderate detail the embryology of the genital system, I will review briefly that portion which has a definite bearing on today's subject and will avoid, except where necessary, those portions which my confreres have so well presented.

The uterus and the uterine tubes are derived completely from the paramesonephric ducts which are mesodermal in origin. On each side of the embryo the paramesonephric duct appears as an invagination of the coelomic epithelium lateral to the cranial extremity of the mesonephric duct. This occurs at about the 10 mm. stage when the embryo is approximately 40 days old. From this opening a solid bud of cells grows caudally, lateral, and parallel to the mesonephric duct. (Figure 1).

As the bud increases in size, a lumen appears in continuity with the opening or ostium, and this lumen gradually progresses caudally towards the growing tip, thus forming a tube. As the two paramesonephric ducts continue to grow, they cross in front of and medial to the mesonephric ducts at about the 23 mm. or 7 week stage. The mesonephric ducts continue growing caudally and medially until they come together and fuse in the mid-line. (Figure 2). This fusion is at first partial, so that there is at first a septum where the two join, but this septum has disappeared at the 56 mm. stage when the foetus is 3 lunar months old, leaving the utero-vaginal canal. Thus at this stage of development, the paramesonephric tubules can be divided into three parts: a cranial vertical, and a middle horizontal, both of which form the uterine tube, and thirdly, a caudal vertical portion which has fused with its counterpart on the opposite side to form the uterovaginal canal, which eventually forms the uterus and the vagina down to the vestibule. Briefly, then, to recapitulate, a vertical duct from each side in the growing embryo extends caudally and medially, and fuses in the mid-line.

From it are derived the fallopian tubes, uterus, and most of the vagina. It can thus be seen that failure in development at any stage of any position of these paramesonephric ducts will result in an anomalous formation of the uterus and/or tubes in the full term foetus.

Developmental anomalies found in the tubes and uterus can be readily understood if one possesses a rudimentary knowledge of their development, and it can be perceived that nearly all such malformations are a greater or lesser degree of the same fundamental trouble. These may range from complete absence of uterus and tubes, caused by failure of the paramesonephric ducts to develop, to the other extreme of double vagina, double uterus, and even reduplication of the tubes. Absence of one paramesonephric duct results in a uterus unicornis, a half uterus as it were, with one tube. Persistence of the septum formed by the union of the paramesonephric ducts, depending on the degree, results in uterus didelphys, uterus duplex bicornis, uterus bicornis unicollis, uterus subseptus, uterus biforis, uterus cordiformis, and uterus bilocularis, and other types of congenital uterine anomalies. (Figure 3).



Smith describes two cases of uterus bicornis unicollis in the same hospital at the same time. Both patients exhibited symptoms at the menarche when a hematometra developed in the uterine cavity that possessed no cervical opening. In one patient he performed a hysterectomy and in the other patient a hemihysterectomy. This latter woman later on became pregnant in the remaining uterine cavity and was subsequently delivered without mishap by Caesarian section.

Going back for a moment to the mesonephric duct and tubules which have remnants persisting in relation to the uterus and tubes, the mesonephric or Wolffian duct draining the mesonephric tubules

runs caudally into the hind gut. The mesonephric tubules are known collectively as the Wolffian body and as this body grows it bulges into the coelomic cavity where it is known as the Wolffian ridge, lying near the developing sex gland. (Figures 4 and 5).

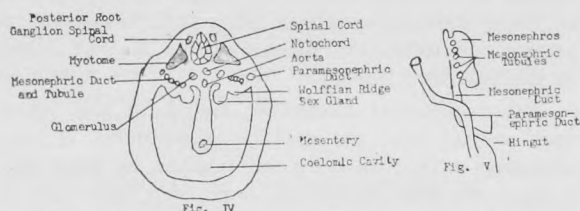


Fig. IV

Most of the tubules disappear in early foetal life but some remain and link up with the sex gland in the male to become the efferent ducts of the testes and epididymis. The mesonephric duct becomes the vas deferens. In the female these structures do not link up with the ovary. The mesonephric tubules become scattered rudimentary tubules in the mesosalpinx: the epoophoron and the paroophoron. The mesonephric duct persists as the duct of Gaertner, running in the broad ligament on either side of the uterus. (Figure 6).

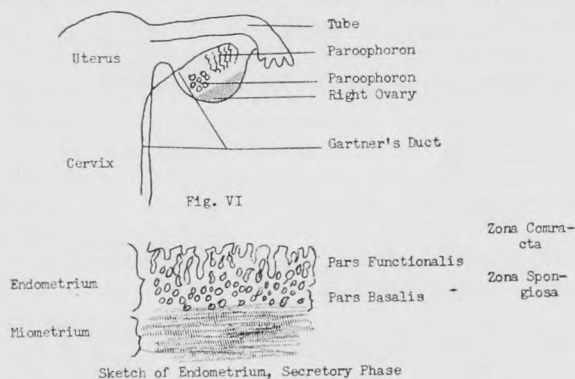


Fig. VI

Sometimes this structure gives rise to cysts. Another rudimentary tubular structure is often found persisting in the lateral border of the broad ligament. This is often seen as a small cyst near the ovary and is called the Hydatid of Morgagni. It is merely a remnant of the detached end of Gaertner's duct.

Since we all know the appearance of the normal uterus, I will not linger on its dimensions. It is made up of a fundus, a body, and a cervix. The fundus is the portion lying above the uterine tubes and is separated from the cervix by a narrow constriction called the isthmus. The isthmus is a small area between the cervix and the body, a sort of transition between the body and the cervix. It marks the dividing line between the upper and lower uterine segment of the uterus in labour. It lies at the level of the peritoneum where the latter is reflected from the anterior uterine wall onto the bladder. At the level of the isthmus the main uterine artery divides into its ramifications and the

ureter continues its course beside the uterine vessels. The cervix protrudes into the superior pole of the vagina and blends with the vaginal wall and is divided into an intravaginal and supravaginal portion. In the female infant the cervix is about twice the size of the corpus, in the young virgin they are about equal in size and in the adult multipara the corpus is about twice the size of the cervix. Following the menopause the corpus again approximates the cervix in size. The average parous uterine cavity from external os to fundus is about 7 to 7.5 cm. deep.

The uterus is usually anteverted and anteflexed and frequently leans and is slightly rotated to the right. Its position varies with the condition of the adjacent viscera, which can temporarily alter the position of the uterus. For example, a full bladder can convert an anteverted uterus into a position of retroversion. The anterior surface of the uterus lies on the bladder in the anteverted position. The convex posterior surface forms the anterior portion of the utero-rectal fossa and the pouch of Douglas, the rectum forming the posterior wall of the fossa. The pelvic colon crosses this fossa from left to right and is in direct contact with the posterior wall of the uterus and sometimes the posterior fornix of the vagina. Not infrequently coils of ileum occupy the recto-uterine fossa. Each lateral border of the uterus lies between the anterior and posterior leaves of the broad ligament. The ureter and uterine vessels run medially, inferiorly and forward, and are in close proximity to the supravaginal cervix just above the lateral vaginal fornix on either side. Peritoneum covers the entire uterus with the exception of the intravaginal cervix, the anterior part of the supravaginal cervix, and laterally, where it is reflected from the uterus to the pelvic wall, to form the broad ligaments.

Mention may be made here of the ligaments of the uterus: the broad, round, utero-sacral and utero-vestibular ligaments. The broad ligaments are made up of endo-pelvic fascia covered by peritoneum extending laterally from the uterus. The superior portion of the broad pelvic fascia is found between these layers. The base is attached to the lateral pelvic wall and forms the strongest single support of the uterus, **the cardinal ligament**. Posteriorly the uterosacral ligaments extend from the cervix to the sacrum, more or less forming the brim of the Pouch of Douglas. They vary a good deal in size and strength, and may be merely slender folds of peritoneum or strong, thick bands of pelvic fascia. The uterovesical ligaments are thickenings of areolar tissue between uterus and bladder and the pubocervical ligament is continuous at the cervix with the cardinal ligament. The other ligaments of the uterus that should be mentioned are the round ligaments, which do not originate from the

endopelvic fascia. They arise on either side of the uterus at the cornu, just below and in front of the fallopian tube. They pass downwards and laterally in the broad ligament to the internal inguinal ring, where they hook around the interior epigastric artery and run along the inguinal canal to the labium majus. Lying posteriorly and below the fallopian tubes is a thickening of fascia covered by a fold of peritoneum extending laterally to the ovary. This is the ligament of the ovary and laterally it blends with the mesovarium.

### Uterine Tubes

These lie in the upper fold of the broad ligament and traverse the uterine wall at the lateral margin dividing the fundus and the body. At the other end they open into the general peritoneal cavity, thus establishing a direct communication from the exterior to the peritoneal cavity. The tubes are about 10 cm. long and divided into three parts:

Isthmus .....	1.25 cm. long	1 mm. diameter
Intrauterine ..	2.5 cm. long	2.5 mm. diameter
Ampullary ....	5 cm. & tortuous	6 mm. diameter

Thus it is seen that the tubes become progressively wider in diameter as they leave the uterus. They culminate in the trumpet shaped infundebulum with the ostial opening which narrows to 2 mm. diameter. The mucous membrane of the uterine tubes is thrown into loose longitudinal folds throughout the length of the tube which, in the healthy state, float freely and independently from one another. They project from the ostium as finger-like fimbriae, one of which is larger than the others and makes direct contact with the ovary, the ovarian fimbria. Histologically the extreme ends of the tubes differ, but have the following common structure:

A simple columnar epithelial lining with some ciliated cells

A Fibromuscular coat

An incomplete peritoneal covering.

The isthmus portion has a narrow lumen and few folds, relatively few ciliated cells and a heavy muscular coat consisting of an inner circular and an outer longitudinal layer. As the ampullary portion of the tube is approached, the lumen widens, the folds become looser and project more into the cavity, more of the lining cells of the mucous membrane show ciliated epithelium and the muscular coat is thinner. Cyclical changes in the tubes are slight but tubal contractions are most marked at ovulation. The epithelial lining is highest during the mid phase and lowest during the premenstrual and menstrual phase, and during pregnancy as well. During pregnancy the cells of the tunica propria undergo a decidual reaction.

### Histology of Uterus

Although the histology of the uterus varies according to the particular phase of the menstrual cycle and whether or not the uterus is gravid, a

general account is given here before considering variations. The corpus consists of any thick myometrium covered with an outer layer of connective tissue with serosal cells, the perimetrium. Inside the myometrium, the endometrium is divided into a pars basalis which remains fairly constant, and a pars functionalis, which undergoes great changes during the various phases of the menstrual cycle. In the secretory phase of the cycle, the pars functionalis becomes very thickened and can be divided into a superficial compact layer and a deeper, spongy layer.

The epithelium of the endometrium consists of simple columnar cells, some of which are ciliated and all of which are secretory. This epithelium invaginates the stroma to form many uterine glands. The stroma surrounding the glands consists of a reticular connective tissue cells with spindle shaped nuclei lying in a reticulum of **argyrophil** fibres. Lymphocytes, granulocytes and macrophages are scattered throughout in varying numbers. The pars basalis shows the tips of the uterine glands interlacing with myometrium. The myometrium consists of thick bundles of plain muscle fibres held together by connective tissue framework. These muscle fibres cannot be divided into distinct layers since they run in all directions and interlace intimately. During pregnancy they not only hypertrophy to many times their original length, "**but new muscle fibres appear**" either by cell division or differentiation of mesenchymal cells. The thickness of the uterine wall may vary from about 1.25 cm. in the non-pregnant uterus to a few mm. in the gravid uterus, and this variation is almost entirely due to muscle changes.

### Histology of Cervix and Isthmus

1. **The Isthmus.** Lined by endometrium of the basalis type takes no active part in menstruation.

2. **The Cervix.** Mucous membrane is more irregular than that of uterus. It is lined by simple columnar epithelium with nuclei at the base of the cells. Short, freely branching, glands may become blocked and appear as retention cysts, called Nabothian follicles. The tunica propria is very fibrous and is a varying degree of leucocytic infiltration, and lymph follicles may be present. Muscle fibres interlace, but there is, roughly, an inner circular and outer longitudinal layer, the latter being continuous with the wall of the vagina.

At the external os the simple columnar epithelium lining the cervical canal meets the stratified squamous epithelium covering the vaginal cervix and this varies a good deal. Experiments by Overholsen, Allan and Zuckerman showed that oestrogen causes replacement or transformation of the simple columnar to stratified squamous epithelium. This process is reversible. Glands enlarge and distend in pregnancy and the veins in the tunica propria enlarge and form a cavernous mass.



Considering now the endometrium throughout the menstrual cycle, we can divide the changes into four phases: proliferative, secretory, premenstrual regression and menstrual desquamation. The proliferative phase extends from the early days of the menstrual flow to the time of ovulation. During this period the oestrogenic hormones produced by the ripening graffian follicle are the main influence. The secretory phase extends from the time of ovulation until the regression of the corpus luteum. During this phase the endometrium is mainly under the influence of the hormone produced by corpus luteum. The premenstrual phase extends from the degeneration of the corpus luteum until the onset of the menstrual flow, usually a period of two or three days. This phase is initiated by a sharp drop in the level of the corpus luteum hormone. The phase of desquamation extends throughout the period of bleeding.

#### **Proliferative Phase**

Cessation of menstrual bleeding leaves an endometrium about 1 mm. in thickness composed chiefly of the basalis layer with a very thin layer of the glandular spongiosa. From this thin layer of spongiosa arises the regenerating endometrium. The raw surface becomes covered by proliferation of the epithelium from the mouths of the open uterine glands. During this phase the spongy layer increases in depth to 3 mm. and the glands which are at first narrow and straight, become larger and twisted. The individual cells of the glands become sharper in outline, vacuoles appear and the nuclei tend to leave the base of the cell toward the centre. In the stroma the cells show mitotic figures. The nuclei of the stromal cells in the basalis stain more deeply than those in the spongiosa.

#### **The Secretory Phase**

Here the endometrium is 5 to 6 mm. in thickness and tends to differentiate into three layers instead of two—the basalis, spongiosa and compacta. The basalis layer remains much the same as previously. The spongy layer contains large, dilated tortuous glands, many of which are filled with secretion. The compacta has fewer glands than the spongiosa, and these are straighter and interspersed by stroma giving this layer a denser appearance. The individual cells in the glands become ragged in appearance. Portions of the cells seem to have disappeared, so that the nucleus may appear in almost any position. The stromal cells in the superficial layers become larger and much more clearly defined showing distinct nuclei and cytoplasm, the beginning of a decidual reaction.

#### **The Premenstrual Phase**

Just before menstruation, the endometrium becomes very edematous and leucocytes begin to infiltrate the stroma. At the same time as the re-

ticular framework of the stroma disappears marked changes are noted in the blood vessels, which will be described shortly. The endometrium then becomes thinner probably due to the absorption of water.

#### **Menstrual Flow**

The most striking feature of the menstrual flow is the variability of the tissue reaction. That is to say that, at a given time during the menses, one can find extreme variation in the state of the endometrium. In one area one may find advanced desquamation, hemorrhage and necrosis, while immediately adjacent to it is an intact area of typical premenstrual endometrium. This is borne out by Markee's work on Rhesus monkeys in which he observed endometrial transplants in the anterior chamber of the cornea.

#### **Changes in Blood Vessels**

During the phases of the menstrual cycle, changes occur in the blood vessels of the endometrium that are just as startling as the glandular changes. The blood supply of the uterus is derived from the uterine artery which is a branch of the internal iliac artery. It anastomoses freely with the ovarian artery which comes directly from the aorta. Branches of the ovarian artery supply the fallopian tube. Blood vessels running in the myometrium send branches deeper to the parametrium. The arcuate arteries send terminal branches to the myometrium, to form a capillary network in the basalis and terminate as spiral arterioles in the layer functionalis. There are numerous arterio-venous anastomoses in the terminal branches of the coiled arterioles and venous lakes in this layer. During the proliferative phase there are few coils in the spiral vessels, and the arterio-venous anastomoses are sparse. In the secretory phase, when the glands become longer and fuller, the spiral arteries become very tortuous. In the premenstrual phase the endometrium becomes thinner due to loss of water from the spongiosa and the coiled arterioles dilate and hemostasis results. The arterio-venous anastomoses in man help to create the stasis by causing direct shunt of blood from arterioles to venules. This leaves small pooled lakes. Hemostasis is the picture when the leucocytic infiltration occurs. A substance appears to be locally produced, which then causes intense vasoconstriction of the endometrial vessels. This persists for 6 to 24 hours in the rhesus monkey, during which time subepithelial hemotomata occur. Bleeding occurs as localized hemorrhages from diapedesis, as direct escape from ruptured vessels, and lakes. This is followed by desquamation.

It would seem, then, that the vascular processes that initiate menstruation are thinning of the endometrium, increased coiling of the spiral arterioles, hemostasis, and intense vasoconstriction.

### Lymphatic Drainage

Lymphatics are found in the myometrium, the basalis, and the lower part of the functionalis, but not in the greater part of this layer near the surface. The lymph vessels follow the blood vessels and drain into the ureteral, iliac, obturator, lumbar and aortic lymph nodes. Some lymph channels of the cervix drain to the inguinal nodes.

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## Tuberculosis

### Tuberculosis Still a Health Problem

Dr. E. L. Ross

Medical Director, Sanatorium Board of Manitoba

There is an assumption on the part of some people that tuberculosis is no longer a major health problem in Manitoba, which is not only at variance with facts but also dangerous. True, there has been great progress, especially by reducing the number of deaths, and through pointing this out we ourselves may have unintentionally created a certain degree of complacency.

I will again review what has been accomplished, as a matter of information and not primarily to stress per se the gains made but to present evidence that tuberculosis can be controlled, and also to show that we are still far short of our ultimate goal of tuberculosis eradication. Even more disquietening is the fact that for the first five months in 1952 there has been an increase in white deaths, 47 in 1952, compared to 35 in 1951. Relapses of known cases have also increased from January to May, 1952, 52 compared to 37 last year. New active cases reported have increased from 135 to 144. Although new cases have been decreasing, the experience here and elsewhere on the continent is that their reduction is not keeping pace with the reduction in deaths. In 1951 there were 333 new active cases and at any one time approximately 1,200 people are in sanatoriums. The average duration of treatment is over a year and, with the cost of hospitalization as it is today, it is obvious that the eradication of tuberculosis is not only important from a public health standpoint but also financially to a taxpayer. Tuberculosis is costly.

New methods of treatment from improved chemotherapy to more advanced surgery, together with more efficient case-finding procedures and broader rehabilitative, social, and welfare services, have gone a long way in reducing the number of deaths from tuberculosis and in returning an increasing number to productivity. These very advances, for the present, tend to increase the

heavy financial burden, which cannot be lifted so long as tuberculosis is allowed to exist to any appreciable extent.

Reviewing figures and death rates may not be very impressive, but if you had the opportunity to know the circumstances and problems created by each new case and each death you would better appreciate that the campaign against tuberculosis is far from completed, and any lessening of the battle cannot be excused. So let me review just a few of the tragedies that are occurring:

A man of 45 and father of 5 children under 12 was recently admitted with acute generalized tuberculosis beyond hope of cure and died. Apart from the sadness of bereavement try and appreciate the problem that tuberculosis has created in this instance.

A young lady of 21 was discovered by routine chest X-ray three weeks after her marriage to have advanced tuberculosis. Her husband's X-ray was clear but he was closely followed and within weeks was found to have the same trouble in one lung. Both are on treatment and doing well.

A young mother of 26 was recently admitted with her old tuberculosis reactivated and with two children, aged 2 and 5, with evidence of being infected — and, besides that, the mother was expecting another baby in 3 months time.

Another young woman of 28 and a mother of six children under 12 was found to have moderately advanced disease. She has been admitted to sanatorium and, although her outlook for recovery is good, she will likely require two years of treatment. Public Health nurses and social workers were called in and the Children's Aid Society have taken the responsibility for placement of the children. At the best this family dislocation will have permanent undesirable effects.

During the course of a year, with 167 deaths and over 300 new cases developing in Manitoba you can realize that such tragedies as cited above

are happening over and over again. In most there are tremendous family, economic and social complications and psychological adjustment may strain the stoutest "heart" and mind.

Tuberculosis is a treacherous disease, insidious in onset and often well entrenched before manifesting itself by symptoms or illness. Preventing tuberculosis simply means preventing people from becoming infected. To accomplish this, every source of infection must be discovered and the only sure way to find tuberculosis is by the X-ray. Yearly for years over 250,000 Manitobans have had chest X-rays. Case-finding has been intensified in communities and racial and age groups where the incidence of disease is highest. Many people think that advancing age provides immunity but during recent years tuberculosis has been increasing among older people—that is, from 50 to 70 years.

You may be thinking of the recent sensational announcements in the press and magazines about

the new "wonder" drugs for tuberculosis. These are valuable adjuncts to treatment but the first big problem is to find all cases as quickly as possible to prevent further spread of infection.

The above is not related to cause alarm and, indeed, as stated at the outset, the tuberculosis problem is only a third that of 15 years ago, but the fact remains that little gain has been made during the past three years. There is still a residue of infection that last year in this province caused 333 known new active cases and, indeed, the potential danger is unlimited if case-finding and control efforts were slackened. One new case of tuberculosis causes 5 to 10 others. If eradication is the objective, and it is, we cannot be satisfied or complacent about the tuberculosis picture as it is today. It is everybody's problem. Without public interest, understanding and co-operation, professional workers could accomplish little. Cost and effort should not be a deterring factor when the ultimate goal is within grasp.

## Clinico-Pathological Conference

Deer Lodge Hospital

### Duodenal Ulcer

To make a long story short, this 75-year-old man had been diagnosed "duodenal ulcer" in 1918 and had been pensioned for same ever since. He was quite fastidious in his dietary and with supplementary milk and stomach powders got along very well for the subsequent 26 years without ever being confined to bed or being required to seek professional attention.

It was not until November, 1943, that he had an attack of pain and vomiting severe enough to warrant hospitalization. A barium series showed a duodenal ulcer crater without appreciable obstruction. Within a couple of days on antacid and sedative therapy there was abatement of symptoms. A recheck barium series showed only a deformed duodenal cap in one month's time.

Short hospital admissions for exacerbations of peptic ulcer symptomatology occurred in the Spring of 1946 and the Fall of 1947. Response to treatment was quite satisfactory and no inciting factor was apparent except that on one occasion he attributed the recurrence of symptoms to the excitement attendant upon the races.

On November 9, 1949, at 3.50 p.m., he was admitted to the peptic ulcer ward by wheelchair. Apparently, for the previous four days he had suffered a severe unrelenting attack of epigastric pain and had intermittently vomited considerable dark brown liquid emesis. His blood pressure was checked every hour and ran around 130/70. Pulse 80 per minute. Respiratory rate of 20. A

routine check at 7 p.m. revealed considerable epigastric tenderness but no guarding or rigidity.

He slept fitfully until about 4 a.m., Nov. 10, when he was awakened by a sudden excruciating pain in the mid-epigastrium which radiated up the R. anterior chest and subsequently was followed by R. shoulder tip pain. B.P. 170/95. He vomited almost continuously, the dark brown emesis at times seemingly admixed with what appeared to be old blood clot. Pulse 110. Temperature 98.4. The R.U.Q. of the abdomen was rigid and board-like. W.B.C. 22,700. Hgb. 111%. Sed. rate 24 mm. Polys. 91% of differential.

A sitting flat plate of the abdomen at 6 a.m. demonstrated a small amount of free air under both R. and L. sides of the diaphragm. A routine chest film showed somewhat emphysematous lung fields only.

At 10.30 a.m. an abdominal laparotomy was undertaken and a large indurated perforated anterior duodenal ulcer was surgically repaired by suturing omentum over the site of perforation.

On the second post-operative day he began coughing up purulent sputum and a portable chest X-ray showed an infective process in the R. base more marked in the cardiophrenic region, with minimal mottling in the left base. Temperature 101 to 102. Pulse 100. Resp. 30. Sputum culture revealed *Monilia albicans*, resistant to Penicillin, Streptomycin and Aureomycin. He was placed on Streptomycin and increasing doses of iodides. He was orthopnoec and coughed up a great deal of purulent sputum but seemed to be holding his



own in an otherwise stormy post-operative convalescence.

On November 23 a portable chest X-ray demonstrated elevation of the right diaphragm to the level of the 4th rib anteriorly but less marked consolidation in the right cardiophrenic region. Air was demonstrated under the diaphragm. An E.K.G. was interpreted as showing diffuse ischemic changes only.

At this time he was running a hectic evening temperature up to 100.4 with morning readings of about 98. There is no record of a leucocyte count subsequent to Nov. 19, when it was 9100 cells per cumm. Hemoglobin had steadily dropped, to stabilize at around 60%. No record of weight loss. Total serum proteins on four occasions during the terminal portion of the illness remained around a low level of 3.7 gms. %.

While receiving I.V. 5% protein hydrolysate he experienced a severe chill reaction with sudden severe epigastric pain and dyspnoea.

Two days later he died. The terminal picture was one of insidious cardiac decompensation and reactivated bilateral bronchopneumonia.

The right pleural space contained 350 cc. of sterile effusion.

There was bilateral basal bronchopneumonia consolidation. Culture revealed *B. coli*, strep. gamma and monilia albicans.

A walled-off subphrenic abscess of the right posterior space was present which was continuous with a large perforated posterior duodenal ulcer. The repaired perforation on the anterior wall appeared intact. A third smaller shallow duodenal ulcer adjacent to the repaired perforated one was also noted.

The liver was light brown in color and soft in consistency.

The myocardium showed rather extensive fibrous scarring of patchy distribution.

Microscopic examination of the various organs corroborated the gross findings.

#### Autopsy Diagnosis

1. Subphrenic Abscess, due to perforated posterior duodenal ulcer.
2. Recent repair of perforated anterior duodenal ulcer.
3. Small active anterior duodenal ulcer.
4. Bilateral bronchopneumonia.
5. Terminal Hepatitis.
6. Myocardial Fibrosis.

#### Sub-phrenic Infection and Abscess

"Signs of pus somewhere, signs of pus nowhere else, signs of pus 'there.'" (Barnard).

"There" meaning underneath the diaphragm. Sub-phrenic abscess has held interest for clinicians and surgeons as the most important of all localized suppurations which occur within the abdominal cavity.

Only a little over a hundred years ago were the clinical features first described. Barnard's classical paper (B.M.J. 1: 429, 1908) outlining his investigations into the pathology, etiology and treatment of sub-phrenic abscess at the London Hospital has formed the basis of practically every subsequent contribution to this subject, and has been widely quoted by such authorities as Moynihan, Alton Ochsner, Pauchet and Fifield.

Paramount in any discussion of the subject will be the anatomy of the region which permits the localized suppuration. Let us briefly review the peritoneal connections of the liver first.

The liver is completely invested with peritoneum except over the "bare area" and along the lines of attachment of the various folds. The lines of peritoneal reflection along the upper and lower borders of the bare area are termed the upper and lower layers of the coronary ligament. At their right extremities the two layers become continuous with each other, forming the right triangular ligament. The falciform ligament connects the anterior surface of the liver to the diaphragm, and the anterior abdominal wall. Its right layer becomes continuous with the superior layer of the coronary ligament, and its left layer is continued to the left on the upper surface of the left lobe. It is folded backwards on itself to form the left triangular ligament which connects the upper surface of the left lobe with the under-surface of the diaphragm. The two layers of the lesser omentum are continued from the left extremity of the porta hepatis up the fissure for the ligamentum venosum, at the upper end of which they separate. The anterior (or left) layer becomes continuous with the posterior layer of the left triangular ligament, while the posterior layer skirts the upper end of the caudate lobe and descends along its right border to become continuous with the lower layer of the coronary ligament. This layer is reflected from the caudate lobe on to the diaphragm, and forms the right boundary of the uppermost recess of the lesser sac.

The sub-phrenic space lies below the diaphragm and above the transverse colon. It is divided into upper and lower compartments by the liver, and into right and left halves by the falciform ligament. There are three spaces in the right half and three in the left half. On the right side, two spaces lie above the liver and are anterior and posterior. They are separated from each other by the right inferior space (more commonly called the right kidney pouch). On the left side, one space lies above the liver and may be called the left superior space; whilst two lie below the liver, and may be called the left anterior and left posterior spaces respectively. They are separated from each other by the lesser omentum, stomach, and anterior layer of the greater omentum. The left posterior space is more commonly called the lesser sac.

These six spaces are intraperitoneal; the seventh or extra-peritoneal space corresponds with the "bare area" of the liver, and lies between the two layers of the coronary ligament. It extends over the upper surface of the liver and down the posterior surface just to the right of the midline.

Good anatomical plates illustrating these spaces seem to be scarce, and certainly no claim as to the superiority of the accompanying crude diagrams is made.

The most frequently involved space is the right posterior superior, and the reason for this is likely the greater accessibility to inflammatory exudate tracking upwards from the right iliac fossa along the right paracolic gutter.

Shea has tabulated his forty cases collected over the past twelve years at University Hospitals of Cleveland, and compared the location incidence with Ochsner's own and collected 3,322 cases:

Space Involved	Shea's Cases %	Ochsner's Own Cases %	Ochsner's Collected Cases %
Right Posterior Superior	45	60	28.8
Right Inferior	7.5	13.5	8.9
Right Anterior Superior	17.5	8	12.7
Retroperitoneal	0	8	14.4
Left Anterior Inferior	0	8	20.2
Left Posterior Inferior	0	0	3
Left Superior	5	2	3.6
Combined	20	8	3.4
Not Determined	5	0	4.7

Sub-phrenic abscess is not a common condition, and no doubt with the early widespread use of antibiotics and surgical treatment of predisposing conditions, the incidence may be expected to decline. Up to 1948, the total number of recorded cases was approaching 4,300. It is a complication more frequently seen in males (70%) around the fourth decade of life. In about 85% of cases, sub-phrenic abscess follows a suppurative process within the abdominal cavity and more than 60% resulted from suppurative lesions of the appendix and from acute perforations of peptic ulcers of the stomach and duodenum.

Site of Primary Lesion	Shea's Cases %	Ochsner's Own Cases %	Ochsner's Collected Cases %
Stomach and Duodenum	42.5	28	29
Appendix	25	26	30
Liver and Biliary Tract	15	18	12
Pelvic Organs	7.5	2	1.5
Pancreas	2.5	0	1.4
Miscellaneous	5	18	25.8
Unknown	2.5	0	0

The bacteriology of subphrenic abscess closely resembles that of diffuse peritonitis. Cultures in about 40% of cases will reveal organisms of the B. Coli group; in 40% Streptococci; in 20% Straphylococci. In about 5% of cases, cultures are usually found to be sterile.

It is estimated that probably not more than 30% of cases of subphrenic infection proceed to abscess formation. The treatment of the two conditions will be diametrically opposite.

Although the various subphrenic spaces inter-communicate, the abscess tends to limit itself in

most cases to one of them since the communications are walled off by adhesions at an early stage in the infective process. The only common example of suppuration in more than one space is seen in the combined involvement of the right posterior superior and the right inferior intraperitoneal spaces in abscesses of appendicular or gastroduodenal origin.

Constitutional signs of sepsis such as fever, leucocytosis and rapid blood sedimentation rate suggest the basic infective condition; local pain and tenderness, referred shoulder pain, hiccough, chest fluid and icterus point to the infection being in the subphrenic spaces; an elevated, fixed diaphragm is almost diagnostic. Actually, diagnosis is often extremely difficult due to the wide variations in the clinical manifestations and the deep and inaccessible position of the abscess.

A difference in etiology, in the age of the patient, or the location of the abscess, coupled with the co-existing condition responsible for the subdiaphragmatic infection and any other complications present will tend to alter the clinical aspects. Regardless of the influences these factors may have upon the origin of a subphrenic abscess, the mode of onset in all cases will take any of four characteristic forms: (1) sudden, (2) insidious, (3) post-operative, (4) recurrent. Clinically, it is often impossible to localize the site of a sub-phrenic abscess more precisely than to say that it is on the right or left side; above or below the liver.

In cases of sudden onset the condition may simulate a ruptured peptic ulcer with an acute generalized peritonitis. There will be acute epigastric pain, nausea, vomiting, and difficulty in taking a deep breath, with the general picture of shock.

When the onset is insidious, the symptom complex simulates that of an obscure intra-abdominal lesion such as a chronic cholecystitis or a mild mesenteric lymphadenitis.

The greatest number of subphrenic abscesses occur post-operatively, or as a result of an intra-abdominal lesion which should have been treated surgically before the process had spread to the subphrenic area.

In those cases demonstrating a recurrent onset, the history often suggests a subacute hepatitis with recurrent acute exacerbations. At the onset of a recurrent "flare-up," there is vague upper abdominal or costovertebral pain, anorexia, diaphoresis, septic fever and chills.

In any case of persistent elevation in temperature of unexplained origin and a history of sepsis, a subphrenic abscess should be considered in the differential diagnosis. Differential diagnosis includes pleural effusion, pneumonia, empyema thoracis, sub-hepatic or abdominal abscess, and even malaria has been erroneously diagnosed.

The prognosis depends not only upon the institution of drainage, but more particularly upon the type of drainage employed. For instance, transpleural drainage has a mortality of about 40% transperitoneal drainage—about 35%; while the death rate following drainage by the extraserous approach may be as low as 6%.

The importance of operative intervention in subphrenic abscess is emphasized by the fact that of 3,038 cases investigated by Achsner and De Bakey (1938), there were 1,096 cases **not** operated upon with 985 deaths (89.8%); as contrasted with 1,492 cases operated upon with 637 deaths (33.8%). In Ochsner and Graves' series (1136), the death rate in those cases with thoracic complications was 52%, whereas in those cases with

no thoracic complications, the rate was only 18%. These figures may not be tenable in these days of antibiotics, but I would guess that roughly the same significance obtains.

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### Percy George Bell—An Appreciation

The news of Dr. Percy G. Bell's death came as a great shock to me, as I had not heard that he was in poor health.

He was born on November 8th, 1884, and after the usual preliminary school period, entered Manitoba Medical College, graduating in 1909. He then decided to specialize in Diseases of the Eye, Ear, Nose and Throat and took post-graduate work in Vienna, Berlin and London. He returned to Winnipeg and practiced his specialty there without interruption save for the four years of the First World War. He met with great success and was appointed Professor of Ophthalmology at the University of Manitoba.

Dr. Bell went overseas in 1914 as a Captain in the 3rd C. Field Ambulance and was successively 2nd I/C Shorncliffe Military Hospital, O/C No. ??? Field Ambulance and finally A.D.M.S. 4th Division, with the rank of Colonel. For his services in France he was awarded the D.S.O.

When Lord Tweedsmuir became Governor-General of Canada Dr. Bell was appointed a medical A.D.C. to His Excellency. During the peace years Dr. Bell was appointed O/C No. 12 Field Ambulance and asked me to be his 2nd I/C. In the Second World War he was Chief Medical Officer M.D. 10, rejoining that appointment in 1944. He was always very interested in the returned men, and was on the staff of the Soldiers Civil Re-establishment (later the D.V.A.). As E.E.N. & T. specialist his work was outstanding and he had a fine appreciation of the trials and difficulties through which the veterans were passing.

My first introduction to Percy Bell was in the fall of 1908, when I attended the Medical Students' Annual Dinner as the representative of St. John's College; I was seated next to Percy and found him a charming and congenial host. His hospitality

was lavish even if somewhat damp.

My next meeting with him was a year later. When I entered the Medical School he had quite a lot to do with the institution, and on that occasion I found his hospitality very much more vigorous, but still damp in a somewhat different manner.

I next met him in France in 1917 where he was Commanding a Field Ambulance at Chateau de la Hague, when I was stationed at Bruay, I had dinner with him one evening, and again I found him most congenial, in fact I never knew him any other way.

In 1923 I moved into the Medical Arts Building and was very fortunate in getting an office in the same suite with Percy and it was my privilege to be associated with him there for the next 15 years—during that time I came to know him very well, and always found him to be a perfect gentleman, a real man and outstanding in his professional work.

His great hobby was gardening, and he often spoke of the time when he would retire to Vancouver Island and be able to indulge in his hobby to his heart's content. His wish finally came true and he retired to the Island, but unfortunately his health broke down and he was not permitted to enjoy for long his cherished dream.

His memory will long remain green among the hundreds of his former colleagues and friends in Winnipeg, and also amongst the great many medical students who passed through his hands. He will be remembered for his fine character, his sympathy and understanding for his patients, his sense of honour which was great, and for all the outstanding qualities that endeared him to all who knew him.

The Medical Profession and the general public will be the poorer for his parting.

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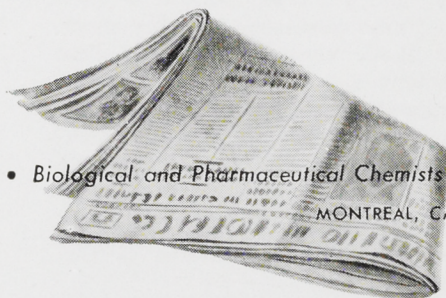
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## Medicine

### Acute Renal Failure

A. E. Thomson, M.D.

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A failure on the part of the kidney to perform efficiently its normal function of maintaining the body's internal environment in a steady state is a frequently encountered metabolic disorder of clinical medicine. Bright<sup>1</sup> was probably the first to point out the relationship between renal failure and edema, and shortly the term uremia (urine in the blood) was applied to the clinical syndrome accompanying such failure. It was soon discovered that nitrogen retention occurred in these cases and for nearly three-quarters of a century the varied signs and symptoms accompanying renal failure were attributed to azotemia. More recently it has been recognized that many of the manifestations of renal insufficiency are due to concomitant disturbances in water and electrolyte metabolism.

A better understanding of the disorders accompanying cessation of renal regulating function can be obtained from studies of acute renal insufficiencies than from chronic cases, both because of the relative normality of body water and electrolytes at the onset of acute renal failure, and because many of these conditions recover either spontaneously or with appropriate therapy.

The mildest and most temporary cessation of normal renal function occurs during general anaesthesia<sup>2</sup>. This takes the form of an intrarenal vasoconstriction accompanied by a 20-40% fall in renal blood flow and glomerular filtration. Associated with these changes there is a fall in urine volume and to a lesser extent in sodium and chloride concentration leading to a diminished water and electrolyte output. These changes occur whether or not there is any fall in blood pressure and tend to return to normal soon after return of consciousness. There is no evidence of a reactive hyperemia or any tendency for electrolyte excretion to rise above control levels. If this temporary impairment of renal excretion of water and electrolytes should persist 8-10 hours post-operatively, as it occasionally does, the excessive administration of intravenous fluids may precipitate pulmonary edema.

A further and more severe disturbance of renal function is sometimes encountered in the following disorders:

1. "Crush" syndrome.
2. Burns.
3. Transfusion reactions — intravascular hemolysis.
4. Surgical shock — paralytic ileus, peritonitis, etc.

5. Obstetrical complications—eclampsia, hemorrhage.

6. Poisons—sulphonamides, uranium, mercuric chloride, carbon tetra-chloride, di-ethylene glycol, arsenicals, methyl alcohol.

7. Associated with severe dehydration and acid-base upset.

The probable overall pattern of disturbed renal function in cases of acute renal failure may be conveniently divided into four phases<sup>3</sup>.

**1. Onset Phase.** The fundamental lesion is renal ischemia resulting in a progressive fall in renal blood flow, glomerular filtration rate and urine formation. Early in its development, at least in the experimental animal, the ischemia is reversible. Unfortunately one is rarely in a position to detect these changes clinically and it is only when the second or oliguric phase has developed that we are awakened to the realization that renal function is grossly impaired.

**2. Oliguric Phase.** The renal blood flow in human cases is frequently less than 10% of normal. This together with the finding of a high A-V O<sub>2</sub> difference (3a) is in sharp contrast to what is reported in experimentally induced shunts in animals by Truetta et al<sup>4</sup> where blood flows were always in excess of 50% of normal and renal venous blood was stated to have been bright red. The oliguric phase persists for a variable period of time and is essentially uninfluenced by any form of therapy.

**3. Early Diuretic Phase.** Glomerular function returns before tubular function (3a), and the urine formed tends to be virtually a glomerular filtrate, unmodified by any selective tubular activity<sup>5</sup>. If this phase persists for long great losses of electrolytes are possible.

**4. Late Diuretic Phase.** Many months are required for a complete return of normal renal function and some impairment often persists indefinitely.

If the patient should succumb during an episode of acute renal failure, we should, on the basis of the changes just discussed and our knowledge of renal function, be able to predict roughly the distribution of the lesions which the pathologist may report.

Renal ischemia should produce lesions in any or all parts of nephrons indiscriminately. Where the effects of an exogenous poison such as mercury have been superadded cell destruction might be expected to be greatest in the proximal tubules because of their functional characteristics<sup>6</sup>. When heme pigments are present no free iron should be found in proximal tubular cells unless these are functioning.



At autopsy pathologists from Colmers<sup>7</sup> in 1909 until the present date have consistently reported that the essential changes are selectively restricted to the distal renal tubules, and comprise "focal degeneration or necrosis, presence of heme casts, secondary inflammatory reactions in the surrounding stroma, and thrombosis of thin walled veins<sup>8</sup>." On the basis of these lesions Lucké proposed the term "Lower Nephron Nephrosis."

It is incompatible with what we know of renal function that distal tubules alone should be involved. Some evidence for proximal damage is suggested by the finding that where heme pigment is present in the tubules no reaction for free iron is given by the proximal tubular cells such as normally occurs when these are functionally intact<sup>9</sup>. More conclusive evidence is obtained from the recent work of Oliver<sup>10</sup> who dissected out whole nephrons from glomerulus to collecting tubule from cases in which routine histological reports indicated selective damage of distal tubules.

In the kidney of any case of acute renal failure he was able to demonstrate disruptive lesions of the renal tubule occurring at random among nephrons and in any part of the nephron. With this clear demonstration of lesions in all parts of the nephron such as we might expect to find after an episode of renal ischemia I think we may safely abandon the term "Lower Nephron Nephrosis" and now discuss some of the clinical aspects of "Acute Renal Failure."

Normally the diagnosis of acute renal failure is only made some 24-48 hours after the precipitating event when it becomes obvious that in spite of adequate therapy for shock, blood loss, or whatever the cause may have been, that the patient is putting out little if any urine. It is most important to appreciate that at this stage no procedure so far advocated such as sympathetic block, spinal anaesthesia, renal decapsulation or forcing fluids orally or intravenously will return urine and electrolyte output to normal. This does not imply that shock and dehydration if present should not be treated but certainly that fluids should not be pushed so far as to produce pulmonary or systemic edema. The former is a frequent cause of death at this period, especially in elderly post-operative patients. Treatment therefore consists of maintaining the patient in status quo until spontaneous recovery or renal function occurs.

#### Fluids and Electrolytes

In the absence of urine formation in an acute renal failure basic water requirements may be met by the provision of 750-1000 cc. of water per diem. It is important to prevent visible sweating; water lost by this route is difficult to estimate and necessitates an increased fluid intake which

may precipitate or enhance nausea and vomiting. Virtually no salt is lost by the kidney during oliguria, hence unless vomiting occurs none need be supplied. Where there is vomiting the vomitus should be returned to the gut via a stomach or duodenal tube. Diarrhoea is not usually troublesome in cases of acute renal failure.

During the early diuretic phase urine volume may increase to reach normal or supra-normal levels. However, the renal ability to conserve electrolytes and eliminate nitrogenous wastes is still grossly impaired. Dehydration, salt depletion and accentuation of an acidosis are common at this stage. A low protein diet supplemented by water and electrolytes, including potassium, in amounts based on the previous day's urinary losses usually suffices.

Where hemoglobin falls below 10 gm./100 cc. transfusions of packed red cells are indicated.

#### Protein Catabolism

Metabolic processes continue as usual, or may be accelerated, especially where infection is super-added. In the absence of urine formation nitrogen retention and a metabolic acidosis develop. A progressive rise in blood urea and in the serum levels of potassium, sulphate and phosphate occurs. Acidosis and nitrogen retention contribute to heightened gastro-intestinal irritability and coma, however, the hyperpotassemia is more immediately dangerous and may result in cardiac arrest<sup>11</sup>.

The aim in therapy during the oliguric phase is therefore to diminish the rapidity and extent of acidosis and serum potassium accumulation. Minimum protein catabolism occurs where protein is performing no function which other foodstuffs can assume. To obtain such a minimum it is generally considered that the caloric value of the non-protein food must be at least twice as great as the basic caloric requirement of the subject. Where carbohydrates supply is inadequate, protein breakdown must furnish the calories which are essential for the continuation of metabolic processes. Where exogenous supply and endogenous reserves of fat are also inadequate, protein is forced to supply the major part of the bodily energy<sup>12</sup>. The maximum protein sparing effect of CHO is achieved by the daily administration of 100 gms. of glucose<sup>13</sup>, a high caloric intake being provided by the addition of fat. This is the background for the diets advocated by Bull et al.<sup>14</sup>, and by Borst<sup>15</sup>, the former containing 400 gms. of glucose and 100 gms. of peanut oil, the latter containing 150 gms. of glucose and 150 gms. of salt free butter. These are given orally, or more usually by tube feeding. Because hypertonic glucose solutions may prove irritating to the gut, replacement of part of the glucose by starch may be advisable. The oral administration of a potassium

free cation exchange resin may prove efficacious where signs or symptoms of potassium intoxication occur.

During the early diuretic phase a gradual increase in dietary protein is allowed as nitrogen retention and acidosis diminish.

#### Antibiotics

Infection promotes protein breakdown hence, antibiotics may be indicated. Because of the greatly diminished renal function only small doses are necessary.

#### Ancillary Procedures

- a. Artificial kidney
- b. Peritoneal dialysis
- c. Intestinal dialysis
- d. Exchange transfusions
- e. Exchange resins

These procedures although they may be of value where oliguria is much prolonged are with the possible exception of (e) neither readily available nor easy to use.

#### Summary

Acute renal failure may develop during the course of a wide variety of apparently unrelated disorders. The available evidence suggests that it is caused by a profound renal ischemia which results in a general depression of renal homeostatic function and is accompanied by disruptive lesions scattered throughout the nephrons. If the patient survives the recovery of glomerular function precedes that of the tubules. This sequence accounts for the metabolic lesions, first of electrolyte and

water retention during the anuric phase followed by their enhanced loss during the early diuretic phase. Until a better understanding of the pathogenesis of renal ischemia is forthcoming treatment resolves itself into maintaining status quo until such time as the kidney recovers some semblance of its normal regulating powers.

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#### Urology Award

The American Urological Association offers an annual award of \$1,000.00 (first prize of \$500.00, second prize \$300.00 and third prize \$200.00) for essays on the result of some clinical or laboratory research in Urology. Competition shall be limited to urologists who have been in such specific practice for not more than five years and to men in training to become urologists.

The first prize essay will appear on the programme of the forthcoming meeting of the American Urological Association, to be held at the Hotel Jefferson, St. Louis, Missouri, May 11-14, 1953.

For full particulars write the Executive Secretary, William P. Didusch, 1120 North Charles Street, Baltimore, Maryland. Essays must be in his hands before January 15, 1953.

## Editorial

J. C. Hossack, M.D., C.M. (Man.), Editor

### Thanksgiving

As I write the leaves are still green upon the trees although they have long since lost their pristine freshness; but when you read these words the alchemy of nature will have changed the greenery of August to autumnal glory.

Autumn is a pleasant season wherein, it would seem, Nature thinks of mankind rather than only of herself. Ever since the first touch of spring she has been concerned solely with the assuring of another generation. The flowers, flaunting their charms like wantons, have brazenly offered themselves to pandering insects. Now they have faded and are replaced by swelling ovaries—promise of next year's increase.

Soon the fruit will have been gathered and the branches left denuded of all but their aging leaves. Then in, as it were, an act of premortem consideration the trees will blaze forth in gold, scarlet and purple and create, for no purpose of their own but only for our pleasure, a scene so beautiful that we shall hold it in our memories till next we see it. And then envious winter will send its chilly harbingers to breathe upon them and the gayly tintured leaves will tremble and flutter to the ground there to assume the sombre colours of decay. Shortly, cold winds will whirl them in eddies and fling them into heaps, sweeping them away so that nothing may come between the brown earth and its white blanket of snow.

Spring is the season of hope. Autumn is the season of fulfillment. When the Pilgrim Fathers fled to the New World they sought to leave behind them all the practices of Prelacy and Popery both of which they detested, and so they banished Christmas as a holiday. Yet, conscious of the blessings they had enjoyed, their hearts were filled with a gratitude that demanded expression and for that reason they established a Day of Thanksgiving which was celebrated in November. In our country the day was added to our feasts but set in an earlier and more suitable month.

In October, also, is the Day of St. Luke our patron Saint. About the details of St. Luke's life we are largely ignorant but we know that to all who were familiar with him he was the Beloved Physician, for he not only performed great works in the name of his Master, but won affection (even as we can do) by the kindness, the sympathy and the understanding that he showed towards all those who sought his help.

Thanksgiving Day and the Day of St. Luke should not pass among us unnoticed. As we look back over the past year there can be but few of us who do not find much for which to be grateful

and few of us who do not wish to give our gratitude some tangible expression. And St. Luke gives, as it were, a hint as to how that gratitude can be expressed.

In the past we have mentioned the Benevolent Fund at Christmas when hearts are warmest and purses readiest to be opened. But Christmas lays many claims upon us. It is not so now. Now there is no special demand and we can think about those who are close to us by reason of our common employment. In our Oath we swear to regard our colleagues as our brothers and we are told elsewhere to love the brethren. Here is the double opportunity to express that affection and at the same time the gratitude we feel for the favours we have enjoyed.

It may surprise you to learn that the Fund requires fifteen hundred dollars. It has been a god-send to many of our professional brethren. Some of them have fallen upon evil days rather from the excess of their own charity than from causes for which they could be blamed. Others have suffered from protracted illness. There are widows who have again been forced to find their own living, and children who have been denied those advantages which their fathers hoped they might enjoy.

These, our brethren and the families of those who were our colleagues must not be left neglected while we have strength and will and means and power to help them.

And so we ask you on Thanksgiving Day, on St. Luke's Day, to think of this means of expressing thanks in a way that touches us most closely. No one will be told whom he benefits. Each will be given a receipt and the amount can be deducted for Income Tax purposes so that it is scarcely an expense. You will get no publicity for your gift. Your alms so given in secret will be disbursed in secret—and so it should be. Remember the Fund. Send your cheques to Treasurer, Benevolent Fund, Winnipeg Medical Society, 604 Medical Arts Building, Winnipeg.



### Curtail Abuse

We suggest that you read carefully the contribution from the Manitoba Hospital Association. It is not unnatural that doctors should seek to spare their patients expense; nor is it unnatural that subscribers to the M.H.S.A. should wish to get out of it all they can. But there is a limit. Abuse of the service leads to higher costs to subscribers and also aggravates the difficulty of getting accommodation and care for those who need it.



In his covering letter Mr. Dawson writes: "I see that Dr. Charles E. Hauser, secretary of the Medical Advisory Committee in southwestern Ohio, reprinted that portion of it, "Category 1. The Physician" and distributed it to all physicians in that area. His comment, that "the contrast cited by Dr. Babcock and the co-operation given by physicians in his area is striking," serves to point out the value of a committee of doctors named by the Medical Society to strive for the correction of abuses, so far as these can be corrected by attending physicians."

This statement is worthy of attention and the procedure is a desirable one to follow.



### "Fugitive Pieces"

For a long time I have been trying to find a suitable heading under which might appear the trivia that usually finds a place under the caption of "Editorial."

Editorial communications should be serious things full of pith and moment. I hereby solemnly swear that they shall be so in the future, now that I have found a designation for what formerly appeared on the editorial page.

I got the title I have selected from a little leather bound volume which I have just come across. It is dated 1771. A note written upon the fly-leaf, in ink so faded that the writing can scarcely be made out, is to the effect that the book itself had at one time been the property of Doctor Samuel Johnson. One does not have to be an antiquarian to feel a thrill of pleasure in the fact that he now owns an object which once was familiar to the touch and sight of the great lexicographer.

For the pratter that will come under it, the heading "Fugitive Pieces" is particularly apt. They will be, let us hope, interesting and not without some value; but they are things of a day, unlikely to stay in the recollection of present readers, and little likely ever to meet the eyes of future generations.



### I. On Spiders and Book-worms

Once upon a time there dwelt in Greece a beautiful maiden, named Arachne, who was also most skilful with her needle. Indeed, so exquisite was her handiwork that, in competition with Minerva (herself no mean sempstress), she was awarded the prize by the unanimous voice of the gods and goddesses who formed the jury.

Now Minerva, although she was the goddess of wisdom, was first of all a woman and further, was a competitor in this test of skill. Therefore, when she was denied the prize she became very angry and, being possessed of magical powers, she vented her spite on poor Arachne by changing her into a

spider. It is for this reason that the generic name "arachnidae" is given to the spider family. This is merely by way of introduction.

One of the pieces in the little volume to which I have referred is a comparison, after the fashion of Plutarch, of two men who were notable for their studies. One was an Italian who, in his age, was to be found surrounded by untidy piles of books between which not a few spiders had found suitable conditions for the spinning of their webs; and Signor Magliabechi, for such was the Italian's name, "besought his visitors that they should not "disturb his spiders." The more important matter of the comparison between the Italian Magliabechi and the Englishman Robert Hill will be considered after we have disposed of the unpleasant matter of spiders.

### Spiders

Now, of all created things none is to me more repulsive than these children of Arachne. For their creation I can find no other reason than the capturing of flies. And for the existence of flies I can find no other reason than the feeding of spiders. Surely the world is so full of a number of things that both flies and spiders could well have been left uncreated.

In no small part, I am convinced, my disgust, my almost fear, of spiders is due to my experiences with them as a child. In the ancient house where I was born and spent my earliest years, is a small cell or dungeon wherein, when I had been more than usually naughty, I was imprisoned. My incarceration was for never more than a few minutes but each minute seemed like an age. The walls were dank. Almost no light found ingress. The solitary door was heavy and locked from without. Even a few of my small paces were enough to bring my outstretched hand in contact with the cold stone walls but these I did not dread. What I feared above all things else was that I might in the darkness feel upon my hands or on my face the touch of hurrying spiders. During the few moments when the door was open for my reception the dim light of the passage-way fell upon waving, grey festoons, and my imagination peopled this gloomy vault with a multitude of horrendous monsters ready to pounce upon me.

Arachne may have been beautiful but not her progeny. I can admire the skillful and cunning handiwork of some of her children but when I contemplate even the most delicate and lacy net, although it be untenanted, I still can see in my mind's eye, the hideous creature whose work it is.

At that time I fortunately had not heard about the cardinal spiders that seem to be peculiar to Hampton Court Palace. These creatures are over an inch in length, have the thickness of a finger, have legs two inches long and are covered with hair. The shadow they cast, when on the floor, is as large as a mouse and is often mistaken for such.

It is hard to believe that anyone can view such monstrous creatures without revulsion and alarm.

Spiders, however, are not without their good points. It would appear that the female spider is as tender with her young as she is fierce towards her husband; for the latter, who is about a quarter her size, she slays and devours immediately after the nuptial embrace. No male spider has a chance to be unfaithful.

On the other hand nothing will induce a spider to desert her eggs. Some spiders merely drop their eggs, uncovered, into a crevice, but others place them in a ball or bag which they spin. The number of eggs may be so large that the bag which contains them is larger than the spider herself. This bag is dragged to some convenient place where the eggs may rest undisturbed. If, during the dragging process the creature is frightened, she runs a little way, falls, draws her legs under and feigns death so completely that she can be pierced with a needle or poked about without giving any sign of life. So soon, however, as the cause for her fear is removed, she comes to active life and rushes towards her eggs.

Now all this is not without some medical significance. Cobwebs have long been used as a local application for stopping the flow of blood. The Ancient Romans and also the Irish used spiders themselves for the cure of fever, the one carrying the living spider in a little box suspended from the neck and the other swallowing the creature alive. This is not quite so foolish and useless as it may seem, because from the web has been extracted a substance which has actions very similar to those of quinine. The people, then, who make pills out of webs do actually employ an efficient medicine however erroneous may be their reasons for so doing. I have not heard of any medicine having been obtained from the creature itself and certainly no good is likely to have been wrought by carrying it upon the person.

Having now disposed of the disagreeable matter of spiders let us now turn to Magliabechi and Hill.

\* \* \*

#### Magliabechi of the Marvelous Memory

"Magliabechi was born at Florence in the year 1633. His Parents were so low and mean a Rank, that they were very well satisfied when they got him into the Service of a Man who sold herbs and fruit. He had never learned to read; and yet he was perpetually poring over the leaves of old books that were used as waste Paper in his Master's Shop. A Bookseller, who lived in the Neighbourhood, and who had often observed this, and knew the Boy could not read, asked him one Day, "What he meant by staring so much on Printed Paper?" He said, "That he did not know how it was, but that he loved it of all Things; that he was very uneasy in the Business he was in, and should be the happiest Creature in the World, if he could

live with him, who had always so many Books about him." The Bookseller was astonished, and yet pleased with his Answer; and at last told him, that he should not be disinclined to take him into his Shop, if his Master would be willing to part with him. Young Magliabechi thanked him with Tears of Joy in his Eyes; and his Happiness was highly encreased, when his Master gave him leave to go where he pleased. Some time after this he learned to read, and as soon as he had, he was always reading when he could."

Magliabechi applied himself to no particular study. A passion for reading was his great passion and prodigious memory his great talent. He read every book that came into his hands almost indifferently and with surprising quickness, yet he retained not only the sense of what he read but all the words and, indeed, every peculiarity of spelling or of punctuation.

"His extraordinary talents and application brought him to the notice of the eminent men of the day and he was consulted by many who wished quickly to put themselves in possession of information the gathering of which, in the usual way, would be tedious. Indeed he was called "An Universal Index both of Titles and Matter." For example "If a Priest was going to compose a Panegyric on such a Saint, and came to communicate his Design to Magliabechi, he would immediately tell him who said anything of that Saint, and in what Part of their Works, and that sometimes to the number of above a hundred Authours." He acquired a large collection of books of which many were allowed to litter the floor of his room. But he could very well have got along without any for stored in his memory was not only the substance but the very words of all the thousands of volumes that he had read.

An author who had lent Magliabechi a manuscript returned later to say that it had been accidentally destroyed and asked Magliabechi to write it from memory, which he did to the most minute detail.

Few men have possessed such a fantastic memory. Macaulay, perhaps, comes closest to him, for Macaulay had but to skim over its pages to absorb a book. He claimed that if all copies of the Bible were to be destroyed he could write it from beginning to end out of his memory and could do the like for many other books. According to his biographer, Sir George Trevelyan, Macaulay's speeches in Parliament were delivered without notes and when statistics were necessary he would quote pages of them without written aid.

\* \* \*

#### Hill the Linguist

Robert Hill was born in 1699 and his father was a tailor. When he was eight or nine years old he went to school for somewhat less than two months and that was the sum of his formal educa-

tion. When he was 10 he was earning his living on a farm but he was frail and guiding a plough was too heavy a task for him so he was apprenticed to his father's trade.

"When he was about 16 he happened to get an imperfect Accidence and Grammar, and about three-quarters of a Littleton's Dictionary, into his Possession. From the First moment of so great an Acquisition, he was reading whenever he could; and as they would scarce allow him any Time from his Work by Day, he used to procure Candles as privately as he could, and indulge himself in the violent Passion he had for reading, for good Part of the Nights. He wanted greatly to learn Latin; why, does not appear: for he himself does not remember any other Reason for it at the present, than that he might be able to read a few Latin Epitaphs in their Church."

In 1717 Hill contracted smallpox and was sent to his uncle's farm in Buckinghamshire. There he tended the sheep and was completely happy for "he could lie under a Hedge and read all Day long." Here he read and re-read a French Grammar. On his return home "he was highly delighted at seeing his old Friend the Latin Grammar again; and immediately renewed his Acquaintance with it."

With some slight assistance from some of the boys who were attending school he mastered a Latin Testament and Caesar's Commentaries. His laborious efforts led to a good understanding of Latin and then he turned his attention to Greek. Again the use of a Testament aided him for he already knew the English translation almost by heart and was familiar with it in Latin.

His income as a tailor was sufficient for his small needs but, unlike Magliabechi who remained unmarried, Hill took unto himself a wife. "In the mean Time, as his wife proved a very good Breeder, he found it necessary to do something to add to his Income; and therefore set up as a School-Master as well as a Taylor, and with so good Success that he generally had upwards of fifty Scholars, for the six or seven years that he practiced it." The "good breeder" exhausted herself by her fertility and was replaced by a rich widow who, now having a free hand with her former husband's estate, squandered it. Moreover she was a termagant and Hill, now loaded with debt, wandered over the country plying his trade as "Taylor and Stay-maker."

"Some Time before he set out, he was seized with a violent Passion for learning Hebrew; for which he can give no other Reason, than that he had seen several Quotations in that Language, in an English Book of Controversy, which he had been studying for some Time."

He set about this task with no more assistance than his books could give him, which was little. But by persistence he painfully and gradually

familiarised himself with the language to such an extent that even ecclesiastics respected his opinions.

The author of this biographical sketch of Hill visited him and said, amongst other things that his "Studies must have broke in upon his other Business too much." But Hill replied that his usual way had been "to sit up very deep in the Nights, or else to rise by two or three in the Morning, on purpose to get Time for reading, without prejudicing himself in his Trade."

"This shews," writes the author, "his Prudence and Industry; and indeed that he is almost indefatigable in any Point that he strongly aims at."

\* \* \*

I should not have thought of bringing these two—Magliabechi and Hill—together for comparison because they differ more than they agree. Rather I would compare Magliabechi with Macaulay and Hill with Adams of Banchory.

\* \* \*

#### Adams the Humanist

Francis Adams was an Aberdeenshire country doctor who practiced not far from where these words are being written. He was as much a genius and a student as either Magliabechi or Hill but his life was of much greater practical usefulness. Here is what Dr. John Brown says of him in "*Horae Subsecivae*."

"Francis Adams was born in the parish of Lumphanan on Deeside. His father was a gardener, and his elder brother is still a farmer in that parish.

"In a memorandum of his literary life now before us, he says: 'As far as I can think, my classical bent was owing to a friendship which I formed, when about fifteen years old, with a young man a few years older than myself, who had enjoyed the benefits of an excellent education at Montrose, which gave him a superiority over myself that roused me to emulation.

"In my early years I had been shamefully mis-taught. I began by devoting seventeen hours a day to the study of Virgil and Horace, and it will be readily believed that such intense application soon made up for any early deficiencies.

"I read each of these six or seven times in succession. Having mastered the difficulties of Latin literature, I naturally turned my attention to Greek as being the prototype of the other.

"It was the late Dr. Kerr of Aberdeen who drew my attention to the Greek literature of medicine, and at his death I purchased a pretty fair collection of the Greek medical authors which he had made. However, I have also read almost every Greek work which has come down to us from antiquity, with the exception of the ecclesiastical writers; all the poets, historians, philosophers, orators, writers of science, novelists, and so forth. My ambition always was to combine



extensive knowledge of my profession with extensive erudition.'

"This was no ordinary boy of fifteen who could, *ex proprio motu*, work seventeen hours a day to make up to his friend.

"He settled early in life in the beautiful and secluded village of Banchory-Ternan, to use his own words, 'with its glassy river and magnificent hills rising in front and behind like another Tempe, with its Peneus flowing between Ossa and Olympus.'" Here he spent his days in the arduous and useful profession of a country surgeon, out in all weathers and at all hours, having the lives, the births, and the deaths of a wild outlying region on his hands. This work he did so thoroughly that no one could, with a shadow of justice, say that his learning lessened his readiness and his ability for the active duties of his calling, in the full round of its requirements. He was an attentive, resolute, wise practitioner, just such a man as we would like to fall into the hands of, were we needing his help. He was always up to the newest knowledge of the time, but never

a slave to any system, or addicted to swear by any master. The whole cast of his mind was thoroughly free and self-sustained. If he had any idols, they were among the mighty and the dead: but even they were his companions and familiar daimons, rather than his gods.

"Nothing can better illustrate his keen appetite for knowledge of all sorts than this curious and touching record of his own observations on the birds of Banchory, and his son's on those of Cashmere. You see what a quick and loving eye the father had kept, during his busy and learned life, upon the natural objects he met with in his rides, and the training he had given his son in such studies at home, which enabled him to turn his Indian observations to good account. This modest but remarkable paper contains not only the ornithological notes, but an admirable pleading for this department of natural history as a branch of liberal education, and a valuable gymnastic for the senses and the mind, and ends with an eloquent, and we think well-founded protest, against the scientific ultruism of the day, the useful information, and cramming mania."

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## Letter to the Editor

May 28th, 1952.

The Editor,  
Manitoba Medical Review,  
604 Medical Arts Bldg.,  
Winnipeg, Man.

Dear Sir:

I have been asked to reply to the letter from Dr. J. F. Edward, published in the May, 1952, issue of your Review. May I at the outset state that Manitoba Medical Service welcomes the receipt of any concrete enquiries and criticisms and will gladly reply to such through the medium of your publication—provided the subject matter can be dealt with in reasonable space. Matters requiring a more lengthy discussion must of necessity be deferred to appropriate public meetings.

Dr. Edward's first question is "If our operating costs can be held at anywhere near the levels of the last two years are we justified in embarking into real estate?" He refers to the decision of the Board of Trustees to construct their own administration building.

In the first place, I fail to see what our operating costs, as expressed in percentage of income, have to do with the question. However, it may be informative to review publicly the conditions and factors that prompted the Board to proceed with their plan. Manitoba Medical Service is at the moment a constantly expanding organization requiring today some 76 office employees, a machine room capable of housing heavy automatic electrical equipment and a reception office catering to the visiting public. These features demand

a well built structure, centrally located, with modern facilities to house employees under satisfactory working conditions and above all, with space facilities capable of expansion.

In 1947 a lease was secured on the present premises of 5,000 square feet on a five-year term basis at the rate of \$1.00 per square foot per annum. At that time the volume of business permitted us to sublet some of our rented offices. By October of 1950, however, we not only had reclaimed our sublet space but were overcrowded to the point where working conditions became so deplorable that we feared a condemnation order by the sanitary authorities of the City. In fact we did receive the equivalent from the Fire Department.

It was therefore decided to strike a Premises Committee to look into and advise the Board on the procurement of suitable space for future needs. This committee consisted of doctors and business men of the Board with Dr. Cherry Bleeks as chairman. It held numerous meetings, solicited the help of innumerable realtors, visited many premises and, we are satisfied, reviewed all suitable space in the City. After over one year of sincere effort they were unable to locate any suitable space in existence. Several choice sites were available in good buildings—but at a rental cost of \$3.00 per square foot on a ten-year lease with no possible facilities for expansion.

It was suggested that M.M.S. emulate Manitoba Hospital Service Association in renting a building built to their specifications. The matter was discussed in detail on several occasions with the

builder and our conclusions were that the costs were beyond our means. Our five-year lease was due to expire in June, 1952, and there appeared to be no prospect of obtaining satisfactory quarters on a rental basis. Our landlord offered to renew our lease on a ten-year term at a greatly increased rental but again the problem of quarters unsuitable to our requirements and with lack of expansion facilities offered no solution. At one time in early 1952 it looked as though we might be out on the street literally. "To build or not to build" became synonymous with "To be or not to be."

The decision to build was made late in 1951 and all was to be well—until out of the blue came the orders restricting steel. We had planned to be in our new building by June, 1952, the expiry date of our lease. That we were able to persuade our landlord to grant us a temporary extension at a reasonable increase in rent is due largely to the brilliant diplomacy of a member of our Board, since retired.

We believe that our new quarters, amounting to some 16,000 square feet, will prove adequate for the present and for some years to come. The easy construction of an additional storey should, we feel, be sufficient to meet our requirements if and when the scheme achieves what we forecast to be a likely saturation point.

Dr. Edward's next question is, "Are we justified in such expansion when our excess of Income over Expenses in the amount of \$128,085.27 is counterbalanced by a Subsidy from the medical members of \$582,763.19?"

Again one must reply that "expansion" is dependant to a considerable extent on factors other than financial. Furthermore that word "subsidy" deserves some consideration. If you will turn to Webster's Dictionary, you will find that every definition given starts with the words "a sum of money." Now the facts are that there never was such a sum of money, and since it has never existed in fact, it does not constitute a subsidy.

One fails to appreciate how anyone can lay claim to, or declare he has lost, something that has never existed. This sum of some half million dollars plus exists only in the accountant's mind. May I suggest an alternate view on this question would be, "In 1951 the profession received 1.5 million dollars in payment of bills amounting to 2 million dollars. Had their patients not been enrolled in M.M.S. they probably (in my personal opinion) would have received little more than 1 million dollars."

Dr. Edward's third question reads, "Is it not time we ceased to try to persuade a most appreciative group of contract holders that there is a Santa Claus and that we are He." He refers to what he terms our "over coverage on Plan B."

It is our intention, Mr. Editor, to discuss the economics of Plan B in detail at the forthcoming annual meeting of the Manitoba Medical Association, and we feel certain that Dr. Edward and others may be astonished to learn of some of the disclosures revealed by a statistical analysis of our experience in the various Plans B.

May I suggest however that the whole question of our M.M.S. plans require a deeper study on the part of the profession. For instance, if your sole purpose is to balance the budget in favour of the profession, then by all means operate your plan on a strict actuarial basis as far as the subscribers are concerned. If on the other hand your purpose is to provide a medical care plan which is acceptable to the public, which will ease their otherwise enormous difficulties, and will thus forestall the forced acceptance of National Health Insurance as presently operating in England, then a compromise on theoretical book fees paid to the tune of 100 cents on the dollar, in full for every month in the year will become necessary.

Yours very truly,

C. E. Corrigan, M.D.,  
Treasurer, Manitoba  
Medical Service.

## Announcement of Van Meter Prize Award

The American Goiter Association again offers the Van Meter Prize Award of Three Hundred Dollars and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The Award will be made at the annual meeting of the Association, which will be held in Chicago, Illinois, May 7, 8 and 9, 1953, providing essays of sufficient merit are presented in competition.

The competing essays may cover either clinical or research investigations; should not exceed three

thousand words in length; must be presented in English; and a typewritten double spaced copy in duplicate sent to the Corresponding Secretary, Dr. George C. Shivers, 100 East Saint Vrain Street, Colorado Springs, Colorado, not later than Feb. 15, 1953. The committee who will review the manuscripts is composed of men well qualified to judge the merits of the competing essays.

A place will be reserved on the programme of the annual meeting for the presentation of the Prize Award Essay by the author, if it is possible for him to attend. The essay will be published in the annual Proceedings of the Association.

## Social News

Reported by K. Borthwick-Leslie, M.D.

Much "gossip" overlooked while I was on holidays, so to those who should be in, I'm sorry.

Dr. and Mrs. J. B. R. Cosgrove and Gillian are at present guests of Mrs. Cosgrove's mother, Mrs. Edwin Chown. Dr. Cosgrove has returned to Winnipeg after four years' P.G. study in England, and U. of Cambridge.

He is now associated with the Research Department of the Medical College, having been selected for a year's work with the National Research Council.

Reports from New York are that Norm Merkeley and Bob Cook are happy and well, working very hard, and surviving the heat, which you can imagine is no more florid than Norm's language.

Dr. Rod Davison has been accepted for a course of post-graduate studies in the Division of Otolaryngology at the Henry Ford Hospital Detroit, Mich., commencing Sept. 1, 1952.

Welcome to Winnipeg to Dr. and Mrs. Sutton and daughters. Dr. Sutton who was assistant Superintendent of Sunnybrook Hospital, Toronto, is now Superintendent of Deer Lodge Hospital, succeeding Dr. W. Dunlop.

Welcome back to Winnipeg to Fischel J. Coodin, M.D., C.M., who announces the opening of his office for the practice of Paediatrics, 601 Boyd Bldg. Dr. Coodin graduated from Queen's in 1947, thence Christ Hospital in Jersey City, intern, and in Pathology. Resident in Paediatrics for 2½ years at the Jersey City Medical Centre and then Research work with premature infants at the Margaret Hague Maternity Hospital under a "grant in aid" from the U.S. Public Health Service.

One might gather that Dr. Coodin is by now familiar with the inner workings of an infant!!

Congratulations to Dr. Emmet Dwyer who has been appointed an Officer Brother, Venerable Order of the Hospital of St. John of Jerusalem. Dr. Dwyer, in his capacity of regional medical officer for the western region, C.N.R., has for some years conducted active First Aid campaigns in the various departments of the company.

Speaking of infants, we have a few new potential members.

Dr. and Mrs. J. E. Rose, Waterloo St., announce the birth of Graham Arthur, July 28th.

Dr. and Mrs. Gordon Steenson, Ashern, Man. (nee Edith Button, R.N.), announce the arrival of Robert Gordon, June 23.

Dr. and Mrs. B. P. Husband, August 22, at the Doctors Hospital, Los Angeles, Richard William arrived, a brother for Paul.

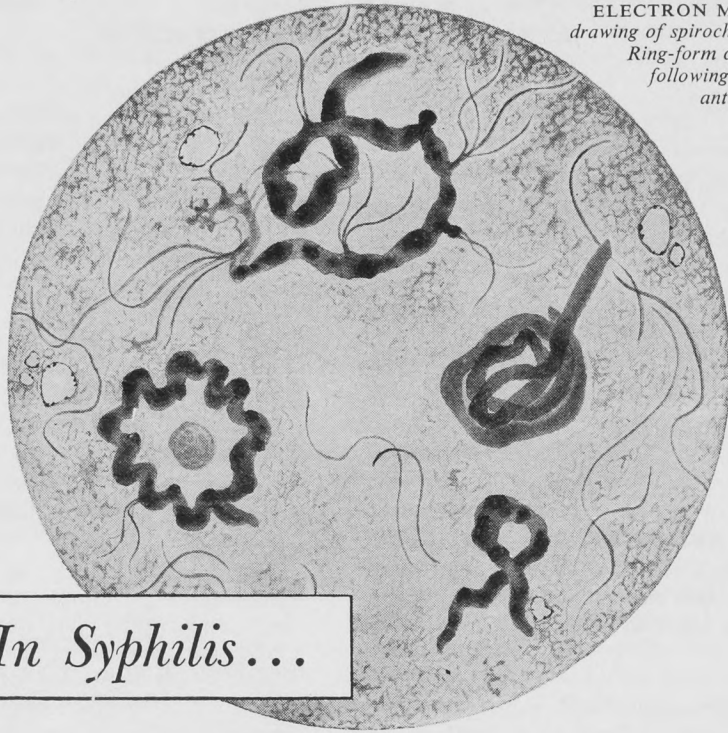
Dr. and Mrs. Sidney Kobrinsky, also a son, Lewis Nathan, July 28th.

Dr. James R. Mitchell and Mrs. Mitchell announce the birth of their second daughter, Sheila Louise, August 19th.

Dr. and Mrs. J. M. Kilgour announce the arrival of a son, August 25th.

Dr. and Mrs. Harold Blondal proudly announce the arrival of the most beautiful girl in the world (but natch), Stefanie Patricia Joan.





ELECTRON MICROGRAPH  
drawing of spirochetes (X18,720).  
Ring-form organisms occur  
following exposure to an  
antagonistic agent.

*In Syphilis...*

## ...the Product of Choice is PENICILLIN

“Penicillin alone far surpasses any previously used antisyphilitic remedy when appraised from the therapeutic, economic, technical, toxicity rate, or prophylactic aspects. And most important, its high index of therapeutic accomplishments is enhanced by the simplicity of administration and its availability.”

Curtis, A.C., Kitchen, D.K., O'Leary, P.A., Rattner, H., Rein, C.R., Schoch, A.G., Shaffer, L.W., and Wile, U.J.:  
Penicillin Treatment of Syphilis, *J. A. M. A.* 145: 1223-1226, April 21, 1951.

## Merck Penicillin Products

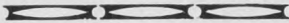
*Both soluble and repository forms of Penicillin are  
available under the Merck label.*

*Research and Production  
for the Nation's Health*



**MERCK & CO. LIMITED**  
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## Article



### "The Old Order Changeth"

Dr. E. S. Moorhead

Among the great reforms and developments of the last century, health of the community and of the individual has aroused outstanding interest and activity.

As this article will present some views on the medical services in a social security plan, certain facts must be taken into consideration. Two terms are used in connection with human health, mortality and morbidity. The former needs no explanation. Nations and life insurance companies have for many years kept accurate records of the cause of death according to age, sex, occupation, etc. Morbidity is the term used for illness which may end in death but most frequently ends in recovery. In other words you can have many illnesses during a lifetime, but die from only one. Morbidity statistics are not plentiful, and are often unreliable. We are told how many working days are lost in industry through illness, but we know nothing about the families of the employees. Some hospitals have records, but many illnesses are treated in the home or doctor's office, and few doctors keep worthwhile records. Therefore, we are ignorant of the morbidity rates of the population, and will be unable to obtain statistics until a plan has been in operation for some years. For this reason a certain amount of space must be devoted to a broad classification of the types of illness which require medical treatment.

Reforms succeeding social revolutions have always been accompanied by certain drawbacks. With the motor car we are able to travel at much higher speed, but many more people are killed or maimed in road accidents than in the days of the horse-drawn vehicles. In health matters we have reduced to a remarkable degree infant mortality, and the chance of survival during the pre-school years is excellent. Also we have added many years to the span of adult life.

Two factors have arisen to nullify some of these benefits and must be put on the debit side. The increased tempo of our daily lives has brought many conditions calculated to rob us of that perfect mental and physical health which we desire. Secondly, to please the eye and the taste we have so tinkered with our foods—euphemistically called "processing" by the manufacturers—that we now have to resort to the drug-store to make up the deficiencies. It has been said that the small farmer of England two hundred years ago was better fed than the same individual in the twentieth century. He ate natural home-grown food. Now he buys provisions at the store, often in a can. Undoubtedly he did not get the variety

which we enjoy, but neither did he stimulate an appetite which were better curbed. He ate enough to enable him to carry on his daily work.

Leaving out the effects of wars, famines, and national disasters, it is safe to say that more people now are ill or die from over-eating than from starvation. We are told to eat green foods, but we have the greatest difficulty in getting them. Head lettuce, cabbage, celery, and cauliflower are white because the sun never reaches them. They have no vitamins. From the point of view of nutrition you might as well be eating wood-pulp. On the other hand, open-leaf lettuce, broccoli, spinach if not over-cooked, and parsley have a very high vitamin content. Bread has probably suffered more than any other staple food, and its nutritional value has been sacrificed to taste, appearance and convenience in baking. Rice when polished is seriously defective in needed vitamins, but you can now buy the valuable part which has been removed. There are many other instances in which we have had to supplement man-made deficiencies by synthetic preparations furnished by drug stores. And we call ourselves an enlightened people!

To return to our mode of living in this twentieth century, we suffer to a greater extent than formerly from functional diseases. Human disease can be divided into functional and organic conditions. In the case of functional diseases, an organ or group of organs is not working with the usual efficiency, but no tests, no operation, and no post-mortem examination will show any fault. In organic disease, the doctor, be he surgeon or pathologist, can demonstrate the exact cause of the disability. A simple example will explain this. You suffer from headaches, but no physical cause for them can be demonstrated by any examination. That is a functional disease. Worry, anxiety, over-work or a highly strung temperament may be the reason. Your neighbour has similar headaches, and is found to have a tumor of the brain. That is an organic condition easily demonstrated. We are the victims of many functional diseases. We are paralysed by fear; we faint at the sight of blood or a bad accident; we are sick at the stomach when we hear very bad news; yet our nerves, heart, or stomach will prove on examination to be perfectly normal.

These functional diseases, and they form at least sixty per cent of our ailments, have been multiplied by the increased tempo of our lives. If we have prolonged life, how successful have we been in making those extra years happy ones? It should be noted that we have also prolonged the lives of the unfit, by that I mean those who are quite unable to support themselves by their own

exertions. The day will surely come when the common man, unable to support his family in comfort because of the taxes necessary to provide for the unfit, will revolt. Discussion on this may well be deferred until the time when a later generation must face it.

There is another class of disease which has increased to a marked degree. I refer to the degenerations. They are partly functional, partly organic, and are associated with the increased longevity of which we are so proud. To grow old gracefully is looked on as one of the virtues, but one which few of us acquire. We resent growing old. The diminishing powers, the reduced activity, the limitation of our faculties for the more strenuous forms of entertainment, the aches and pains which limit us, "the evil days when thou shalt say I have no pleasure in them," all these tend to drive us to seek in the doctor's office or the drug store that elixir of life which nobody has ever found. Our observation of living things should remind us that decay and death come to all. Man accepts his white hair and knows that nothing can be done about it, the hardening and loss of elasticity of his skin also. But when he is told that his arteries have hardened and his blood pressure is high, he seeks a cure where there is no cure. The suggestion of moderation in food, drink, work or pleasure has no appeal. Putting back the hands of the clock alone will satisfy him. To meet this condition, the medical profession, helpful as ever, supplies a title for growing old and provides a specialty to deal with it. This new specialty is called "Geriatrics," a very useful name to report to your friends and one which will cause envy until they discover the meaning of it.

With this introduction, we can now discuss a problem which is causing wide-spread concern in this country, how to provide and pay for the cost of medical care. Three bodies are involved—the government, the public, and the doctors. It will be necessary to consider the view-point of each of these groups and try to find some co-ordinating factor or factors which will result in full co-operation.

The government is endeavouring to satisfy the people's desires by providing care and treatment of illness as part of a social security plan. Two questions at once present themselves: What services will be needed? and How much will they cost? A difficulty at once becomes apparent—the lack of past experience. You must understand that it took two hundred years to reach the present relatively low cost of life insurance which started at an almost prohibitive figure. Death is positive and final. Illness is vague, indefinite, frequently temperamental, of uncertain duration and often incurable. Actuaries can be of great assistance when experience, verified by statistical records, is available. The numerous voluntary

pre-payment plans now in operation have provided few records other than income and expenditure. Nations have figures on their own plans, but are their methods and services what the average Canadian wants? Any plan introduced in Canada will have many unknown factors which time and experience alone will solve.

A term often used, "a complete medical service," has no meaning because each of the three groups would give a different interpretation of it. If a plan is set up without a reasonably clear definition of that term, who will be left holding the bag?—for undoubtedly there will be a bag. It is not my purpose at this stage to suggest a per capita cost, and I have not the courage to do so. Having studied figures on this subject suggested by government and lay groups, I have had very little difficulty in finding discrepancies and fallacies. "Experience teaches" is as true now as when the first Roman coined the expression. One requisite is that in the matter of cost a large margin of safety should be available. Secondly, there should be a thorough search for loop-holes in the rules and regulations.

The views of the public are many and varied. Dread of an emergency, be it accident, illness or operation, is never far away from the thoughts of a father and mother whose responsibilities already tax their resources. Protection of dependents against conditions following a death can be covered by insurance. The purchase of a house, provision of food, clothing, fuel, furniture, etc., can be managed on a budget system. But loss of health is sudden, often catastrophic, and leaves a load of debt that may last for years. When such a misfortune arises, sentiment overwhelms judgment. "Spare no expense" is the direction given to the doctor. One cannot temporise when the life of a loved one is in danger, and cost is a thing which is not counted. Very often charity in greater or less degree is part of the after-math, but charity is a thing which the average Canadian is not willing to accept. He is an up-standing man, ready to shoulder his responsibilities. "Tell me how I am to meet the costs of a major emergency, and I will undertake to be prepared." He has been saying that now for some time. Pre-payment medical and hospital services give only a partial answer and only for certain groups.

It is not the catastrophic illness or accident which will create a problem for a national or provincial health measure. Hospitals, insurance corporations, and compensation boards have records which will give a reasonable approximation of the incidence of these. It is the illnesses and services which are usually dealt with in the home or office. If the patient and/or doctor be given the privilege of deciding what illness should



be treated, and to what extent, then it is tantamount to handing each of them a blank cheque. Says the first, "I am promised and am paying for a complete service, and I am going to have it." Says the second, "I am going to practice medicine the way I think it should be practiced, and regardless of cost." You have only to visit the outpatient department of a large hospital, and you can easily understand what will happen under a government plan. Even a layman looking at the crowded benches will realize that many of the occupants will never be cured. If he looks at the history sheets, he will find in many instances that these people have been coming for two to four years, that they have been passed around to various specialists, and have had a multiplicity of X-rays, blood tests, physiotherapy and all those other services which a first-rate hospital can provide. Until fairly recently these unfortunate people, finding that the hospital staffs appeared to be getting tired of them, ceased coming and patronized some other hospital, where most of the tests were repeated at considerable cost to the taxpayer and the cause of red ink in the hospital ledgers.

By and large, these people are neither paupers nor objects of charity. The father probably has a steady job in one of the lower wage groups. Also he may have a wife and from two to ten children. What chance has he of meeting hospital bills, or paying for the services of a private physician? He and his dependents will be included in a health plan. Because of his experience in the hospital departments, he has a very good idea of what a complete examination means. He will expect the same under a private physician. Consultants, specialists, etc., will be requested. If the doctor tells him that he does not consider them necessary, he will probably change to a more complacent one. Then, the doctor's office is a long way off, or there is an hour or two to be lost in the waiting room, or the weather is inclement, why not have the doctor come to the home? Our citizens are neither selfish nor inconsiderate, but there are quite enough exceptions to upset the calculations of statisticians and actuaries.

Another class of patient who will require a great deal of service is the one who has an incurable complaint. There are many of these: the chronic arthritic or rheumatic, the asthmatic, the dyspeptic, those with a persistent sinusitis, the woman who wishes to pass through the change of life without enduring the discomforts associated with it, the patient with an excellent heart who was told once in the distant past that he or she had a weak heart and has never forgotten it, the high blood pressures, the social climber, highly-strung and very temperamental, who has a neurosis which includes symptoms of most of the known diseases. For many of these the remedy

is often found in a straight talk by the doctor, that is if the patient has complete confidence in the family physician, and the latter is not afraid of losing a patient. "You have this condition; you are never going to be entirely free from it, and you might just as well adjust yourself to it instead of making life miserable for yourself and your family, and being a bore to your friends." Few doctors appear to have the courage to make such a statement, and fewer patients seem ready to accept it. One type quite familiar to the family doctor is the young woman recently married and very neurotic. Let her have a baby and that is the end of her ailments; the baby engrosses her attention. All the above and many others will be much more of a problem for the administrators of a health service than are the emergency illnesses.

This is an age of specialists. Humorous writers have poked fun at them so it is not necessary to add anything further except to say that specialists in a national plan as in private practice can be very expensive. The percentage of specialists is rising so rapidly that leaders of the profession on both sides of the Atlantic are much concerned about it. England has recently brought out a report, based on a prolonged investigation, that medical schools are placing too much emphasis on instruction by specialists, and that schools are needed which will turn out a well-balanced and educated general physician. One requisite of his education would be that he should appreciate that some of his cases are beyond his powers and should be referred to a specialist. Many people think that no-one except a specialist can treat their ailments. The decision is often made after hunting through the pages of a home doctor's book, or noting the position of the most prominent symptom. On this basis a specialist is chosen. Pain over the heart is a very common condition. In 80 or 90% of the cases it is probably due to muscular rheumatism, but a heart specialist is the first choice. Frequently the diagnosis by the patient and the choice of the specialist are both wrong. When our old friend cold in the head is re-christened sinusitis, it does impart a feeling of satisfaction and importance.

We can now consider the last of the trinity in this plan, the doctor. He is the key figure, but that does not for a moment imply that he is the most important figure. The citizen is still supreme. Government and doctors are only those who serve and administer to his welfare. It is quite apparent to those who read the news about this and other countries that the doctors are not taking kindly to their share of the present economic changes. In science, skill and a desire to aid suffering humanity the physician's record cannot be surpassed. In medical economics he is conservative to the point of being controlled by a system which originated centuries ago and is only now

being altered in some countries. His services have been distributed amongst three groups, the well-to-do, the middle classes, and those at or below the subsistence level. His fee scale was based on the minimum of what the well-to-do should pay. For the middle class this was modified, and in cases of heavy expenditure a figure was reached by negotiation. In some cases where specialist and patient were strangers, it is likely that there would be difficulty in assessing the capacity to pay. With regard to the third group, an enforced charity exists in rural areas, as public opinion would be very critical of the doctor who refused his services if no other doctor was available.

The picture in the city is entirely different. The fees paid by the wealthy group cover the financial loss in the lowest economic section. For those on the honorary staff of a big teaching hospital there are such very definite advantages that appointments to the staff are eagerly sought. The patients are those in the public wards. Much experience and skill are obtained and valuable research work carried out especially in the testing of new methods of treatment, surgery, etc. New drugs likely to be of value, but in short supply, are usually allotted to a few leading hospitals. The teaching of students and internes is a stimulus, and much kudos accrues to the holder of a staff appointment. It is quite true that the public ward patient gets for nothing services which the semi-private patient could not afford. In Great Britain it was, and probably still is, a fact that the finest hospital accommodation was reserved for the pauper. Under the various pre-payment plans the high fees have been reduced, and the profession is alarmed. It cannot assimilate the fact that it is now being paid for those who formerly got free service in the public ward, out-patient department, and often in the home. There is also the increased volume of business. In industry increased volume usually means a reduction in cost, but medical economics does not accept that principle.

A marked change has also taken place in the services supplied. I would ask you to remember the earlier remarks on improved child welfare and increased longevity, and I would remind you that those took place at a time when most of our ailments were treated by the family doctor. He was first of all a friend and a confidant. He was wise, experienced and sympathetic. He was an excellent psychiatrist because he was aware of most of the family skeletons. He knew that the loss of sleep, of appetite, of weight, the headaches and the multiple pains of the middle-aged mother were not to be solved by an extensive diagnostic examination and the possible removal of some internal organ. He also knew that the husband's conduct was not all that it should have been of late, or that he had taken to drink and was in danger of losing his job. There was the daughter

who had become pretty wild, came home very late at night, and her mother feared a tragedy. These things he knew, and he could help for he was to be trusted.

All these have a bearing on a national health service because functional conditions form the largest proportion of our ailments. Are we to be treated by the family doctor with reference to the specialist or consultant as needed, or have we decided that the assembly line of the clinic will solve our trouble? There are other healing cults besides the medical profession, and they often cure where the doctor has failed. They also often fail to produce the promised cure, but so do the doctors. Many leading doctors on this continent and in Great Britain are writing and speaking freely of the change which is taking place. The gist of it all is that too much attention is being paid to physical abnormalities which may or may not be harmful, and too little to the treatment of a sick human being.

A short study of the doctor might be of assistance because you who only see him in times of stress know very little about his outlook. It has been said more than once that although the average Canadian likes and respects his doctor, Canada neither likes nor respects the medical profession. The doctor is an individualist. While he gives much care and thought for the welfare of his patients, he is not community-minded. He does not read the numerous articles, frequently critical, that have been published, and he would dismiss them if he did. He has been given many privileges and much power by the state. The result in many cases is a somewhat swollen ego. The nurse and interne stand meekly by the bed with writing pad to take down his orders. In the home his instructions are final and not a subject for argument. The state has also given him much power over the members of his profession, even so far as to take away a member's livelihood by cancelling his license to practice.

How has he used all this power? The rural community has been short of doctors for a long time. Municipalities in despair finally employed salaried doctors. The profession objected strongly and threw every obstacle in the way, but suggested no remedy for the need. At the present time the rural needs are greater than ever, but young doctors are being taken into groups or clinics in the cities where their services are very much of the assembly line type. In this respect the profession owes a duty to the community and has not fulfilled it, but will be inclined to resent any action on the part of the government or public to overcome the difficulty. The suggestion has been made that doctors from Europe either in displaced persons' camps or elsewhere should be brought over to supply the needs of these rural areas. The reply has always been that these doctors do not

measure up to the standard required of Canadian doctors. It rather weakens this argument if we remember that during many decades hundreds of doctors from this continent have been going over to the countries of these displaced persons to receive instruction in their methods. Even if these doctors do not measure up to Canadian standards, are the people in outlying areas to be refused any kind of service? If a hungry man asked you for some bread and butter, would you refuse the bread because you had no butter?

If a general health service is to be inaugurated, it is quite certain that the government, public and doctors will be found to have widely divergent views on benefits, costs and administration. To judge by reports of commissions, etc., issuing from Ottawa and Washington over the last few years, those studying the problems have very little knowledge of the practical difficulties involved in the application of principles based on theories. Costs at a time of inflation will be one of the problems. Experiences based on existing plans show that utilization of services is very much increased when the beneficiary is not paying directly for them. This should be realized more than it appears to have been. Continued multiple services for chronic or incurable conditions can be a heavy drain on the budget. Therefore, some form of controls must be exercised over both patient and doctor. A considerable number of each of these will result it: the patient because he thought there was no limit to what he could demand, the doctor because no outsider had ever dictated to him what services he should provide. The claim that there should be no interference in the relationship between doctor and patient will be re-iterated. The general practitioner who has installed an X-ray machine, and many have, will find that his patients are susceptible to the suggestion that a picture should be taken. Neither of them seems to be aware that the interpretation of shadows on a film is a highly skilled procedure, requiring much special training and experience.

New and improved (?) medicines are being placed on the market in an ever-increasing flood. Before research and tests as to their value have been carried out, laudatory articles hailing the new cure appear in the press or periodicals. Patient and doctor will consider that they are entitled to use this wonderful discovery. The final question arises: who is to control the administration of a plan involving so many controversial issues? The government, because its political

career is embodied in the success of the plan, can reasonably claim that it must have control. Members of various citizen groups, seeing that it is their health and welfare that are at stake, will demand strong representation. The doctors will charge that since it is a medical plan, of course doctors should dominate it, regardless of the fact that administration of a big business did not enter their curriculum.

The profession is prepared to accept a national health service, but on its own terms. And in these days of inflation the terms are likely to be high. As in other countries, organized medicine has not prepared a definite scheme to provide an adequate medical service for all. Should it be on an annual per capita basis or on a fee scale for every service rendered? The latter would probably be preferred, but with unlimited utilization and the present fee scales, the budget would be exhausted long before the year was over.

To what extent may we look for co-operation? Medicine, as may be expected, is to a great extent controlled by the leaders of the profession, in other words those who have acquired distinction through their scientific attainments. Any changes affecting their livelihood are revolutionary and distasteful. Co-operation is much more likely to be shown by the general practitioner who has not acquired the same security as his leaders and suffers from local or national fluctuations in the economic sphere. He, however, is not vocal at general meetings and has little power in dictating policies. In order to get the co-operation of the profession a carefully prepared course of instruction will be necessary. Seeing that top-ranking men will be unlikely to join the service since they will always be able to collect high fees from their wealthy clientele for special skill and care, the campaign should be directed to the general practitioner.

This has been an attempt to place before you an unbiased dissertation on a subject which has not been remarkable for lack of bias in the past. No attempt has been made to present a plan. It will be time enough for that when all citizens have learned that they must be prepared to assist by making themselves familiar with many of the components of a very difficult structure. Of course, medical health services will come, but their form will be arrived at only by co-operation, by the reduction of sectional claims, and by a desire to further the welfare of the community.



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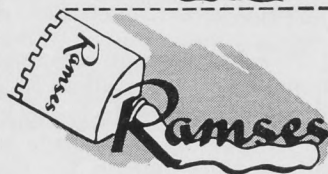
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## Historical

### 45 Years Ago — Continued

The April and May, 1907, numbers of the Western Canada Medical Journal differ slightly from others in Vol. 1 in that the page size is cut by 1 inch all around. Could there have been a paper shortage at that period or did the unexpected popularity of the Journal so deplete the local paper stocks as to make the printer cut his cloth to the wind? No explanation is offered by the Editor—who for the first time reveals his name on a new inside title page in the April, 1907, issue—

George Osborne Hughes, M.D.,

Editor-in-Chief.

Harry Morell, M.D.,

Managing Editor.

The advent of the Managing Editor betokens an expansion of staff and a sharing of responsibility undoubtedly due to the Journal's new-born prosperity. This is again reflected in an expansion of the Editorial offices from 8, to "8 and 9 Commonwealth Block, Winnipeg, Man."

Number 4, Volume I, for April, 1907, opens with the leading article entitled "Some Observations on Raynaud's Disease," by G. A. Gibson, M.D., Sc.D., LL.D., of Edinburgh, Physician to the Royal Infirmary, Edinburgh; Lecturer on Medicine and Clinical Medicine. One cannot help being amazed at the number of articles written apparently primarily for the Journal by renowned members of the profession abroad.

Dr. Gibson indicates he will discuss only those cases of Raynaud's disease "in which the origin of the symptoms is obviously reflex in character," while a colleague, Dr. R. A. Fleming, in the May, 1907, issue discusses cases "in which definite structural changes in the vessels are clearly shown during life."

Dr. Gibson centres his dissertation about 2 clinical case reports. Both patients were young males with vaso-motor disturbances of the extremities, though one complained chiefly of "pain in the chest, distention after meals, palpitation on exertion." Both were completely and permanently cured by—no, surely not—but yes, definitely—by nephropexy of the right kidney. He concludes by stating, "It may possibly be objected that mobility of the kidney is, in itself, scarcely sufficient to produce such widespread disturbances (as gastric dilatation), but clinical experience has taught me that movable kidney is a fertile source of palpitation and of tachycardia, and it seems to me that there can be no doubt of its power to bring about all the vaso-motor changes which are summed up under the title of Raynaud's Disease."

The second article in the April, 1907, issue is entitled, "An enquiry into the relationship between

pelvic disease in the female and abnormal psychic action," by Ernest A. Hall, M.D., L.R.C.P., Edin., of Vancouver, Canada. In brief, 128 females with disturbed mental function constitute the basis of investigation and these cases are tabulated on a single folded piece of onion skin paper glued to page 145. Ninety-two per cent of these displayed pathological pelvic conditions. 54 were submitted to specific operation and "40% recovered their normal mentality, 25% were improved while 27% were not improved" and 8% died. A detailed argument concerning the nervous pathways between pelvic organs and brain is a bit difficult to follow.

The third article—and so far we note a rigid adherence of the three feature presentation—is entitled "The effect of sunlight upon white men in the West. A Reply to Dr. Heustis," by Henry R. Bond, M.B., C.M., Edin., late physician to Auckland Hospital, New Zealand. Ten pages are devoted to denouncing the theories of the Rev. Heustis which appeared in the issue of February, 1907. The writer states he has "spent two summers and the winter between them in the open sunlight of the Northwest—apparently on a visit to the Yukon during the gold rush. He deplores conditions in the United States where "wealth, ease and luxury are producing among the native born white people the same effects as in Rome when at the zenith of her wealth and power." This, rather than sunlight, accounts for "the degradation of the Americans." If the time should ever come that the people of Canada follow in the same course as their cousins across the border are pursuing, then the white race in this country is doomed."

In the Editorial section we read "Having gone successfully through our first quarter . . . we feel confident we are here to stay!" "Many subscribers and others (? the printers) have suggested that we raise the price to \$2.00 per annum."

Dr. Lincham of Dauphin, reports a "Complicated Case of Dysentery" which recovered on appendicostomy and colonic irrigations. It is an almost classical description of ulcerative colitis.

Dr. R. J. Manion of Fort William, Ont., reports a "Case of Ether Poisoning," or rather ether addiction in a Swedish hotel waitress.

"The Thunder Bay Medical Association is thriving. Fourteen out of twenty-six members attended a session."

"The Alberta Government propose to establish a provincial University at Strathcona."

"Dr. E. D. Hudson of the House Staff of the General Hospital has formed a partnership with Dr. Lawson of Hamiota."

"Dr. and Mrs. W. Gordon Campbell will visit Toronto and Brantford and then take up residence

in Winnipeg."

This is what we were wondering about. "Dr. Harry Morell, M.D., Toronto, M.D., C.M., Trinity, late of Litchfield, Minnesota, Coroner for Meeker County and District Surgeon for the G.N.R.R., is now a resident of Winnipeg. Dr. Morell was U.S. Army Surgeon during the Philippine Campaign"—and now the Managing Editor.

"Dr. Halpenny, Winnipeg, is taking a post-graduate course at the Johns Hopkins University."

Married—"Campbell-Dennison—at St. Martin's Church, Montreal, Feb. 27th, Dr. W. Gordon Campbell, of Winnipeg, was married to Miss Christina Beatrice Dennison."

The final page of Number 4 runs a list of books received for review—another hallmark of the truly established Journal.

We note another ad with interest. William Gray and Company, Winnipeg Real Estate Merchants, 54 Aikins Building, McDermot Ave., Winnipeg—quote—"on all investments made on our advice, we are prepared to guarantee our clients 10 PER CENT IN ONE YEAR on the capital invested."

And sure enough an editorial announcement—repeated, at that—"after MAY FIRST, the Subscription Price of this Publication will be increased to TWO DOLLARS PER ANNUM."

Number 5, Volume 1, for May, 1907, confirms the Two Dollar prediction of last issue.

Dr. Robert A. Fleming, M.A., M.D., F.R.C.P.E., Lecturer in Practice of Medicine, Assistant Physician Royal Infirmary, Edinburgh, carries on with the cases of "Raynaud's Disease which are unquestionably of organic nature." One case, aged 63, a seaman, commenced having trouble "over 40 years ago—in Greenland, when his feet were so badly frostbitten that he was quite unable to walk. His treatment consisted in the application of boiling urine!" Well, how are you so sure it won't work?

Another rebuttal to the Rev. E. C. Heustis and his sunlight theory is delivered by A. G. Welsford, M.D., F.R.C.S., D.P.H., of Rome, Italy—who coincidentally is promptly appointed to the position of local Editor (Rome reports to Winnipeg!—shades of the Via Nazionale). Another ten pages of strafing for the Edmonton essayist.

If you will look at the May, 1952, issue of the Canadian Medical Journal, page 475, you will find the report of a case of "Intestinal Obstruction Complicating Pregnancy." It is presented by three Winnipeg doctors. In the May, 1907, issue of the Western Canada Medical Journal, page 207, you will find the report of a "Case of Appendicitis Complicated by Pregnancy." In one instance it is the pregnancy that is complicated, in the latter the appendicitis is complicated. It might be interesting to speculate on what grounds which component deserves priority. In May, 1952, the patient underwent a successful bowel resection and then de-

livered a living child spontaneously. In May, 1907, a craniotomized fetus was delivered and subsequently an appendiceal abscess was successfully evacuated—without the luxuries of modern anaesthesia, antibiotics, etc. Each attendant directed his first attack to what he considered was the complication. Both performances command our praise.

The Editor says, "We are glad to report that every day brings us new subscribers, some of whom living far in the country tell us they have just received the Journal. These letters are most encouraging because of the ring of hearty wish to co-operate in its success. . . . The Journal travels to the old country, to the Continent, to South America and the United States."

"J. J. Dougan, Esq., is our only accredited representative in the Provinces." Could the age old racket of illicitly receiving subscriptions have been experienced?

The second letter to the Editor appears. It is from a medical student, pleading for Dominion wide licensure.

A Special Article, The Congress of Internal Medicine at Weisbaden, Germany, 1907, is by C. F. Martin, B.A., M.D., Professor of Clinical Medicine, McGill.

"At the last meeting of the Winnipeg Medical Association, typhoid Fever was discussed. Dr. Douglas read a paper on etiology; Dr. Gordon Bell, the pathology and bacteriology; Dr. Beath, the complications met with in typhoid; Dr. Stuart gave the comparative statistics, and Dr. Campbell, the treatment.

In Winnipeg in April, 1907, there were 26 cases of typhoid with 2 deaths. In Edmonton, 27 cases.

"The physicians of Grand Forks, N.D., have come to an agreement to raise their fees to \$2.00 a visit instead of \$1.50."

"There is to be an Army Medical Corps in Winnipeg. Dr. Webster will command. There is still room for a number of good men."

"The quarantine hospital built by Winnipeg City Council is ready."

"Dr. Thomson of Regina, had a bad accident lately, fracturing one of the bones of the hand while attempting to board a freight train?" reminiscent of the depression years.

"Dr. Bigelow of Brandon, has gone to Rochester, where he will visit Dr. Mayo's hospital."

"Drs. Musgrove, Mitchell and McDermot, of the General Hospital Staff, Winnipeg, will practise in the city."

"Bigelow-Gordon—April 12th at St. Paul, Minnesota, Dr. W. A. Bigelow of Brandon, was married to Miss Grace A. Gordon of Minneapolis."

Four books are reviewed—the first so far, two of them by Dr. J. H. Bond. Five more books have been received.

The last page of the May, 1907, issue contains a list of Graduates and Licentiates for Manitoba,



1907. Your reviewer quotes only those whose names ring familiar.

M.D.—Edmund James Boardman, Prescott Campbell McArthur, Andrew Pritchard MacKinnon, Franklin Guy Schwalm, Victor George Williams.

C.M.—Roslyn Brough Mitchell, Wm. Wesley Lorne Musgrove.

In the advertisement section we note:

#### PRACTICE FOR SALE

Alberta—Practice for disposal in prosperous and growing town, owing to death in family. Collections in 1906 over \$2,600.

## Book Reviews

### The General Adaptation Syndrome

The Story of the General Adaptation Syndrome is just that—a simple easy to read and thoroughly enjoyable story. It tells about the conception, the genesis, the gestation, the delivery of a concept which has proven to be the key to many mysteries.

The seed was sown in Hans Selye's mind when he was only a lad of 18—a naive medical student attending his first clinics. Cases were presented in which the symptoms were indefinite. Most sick people had many of them in common. But these attracted no attention on the part of the lecturer. Not general but specific symptoms were the important ones. And Selye wondered why this should be so and wondered if there was such a thing as a "syndrome of just being sick."

Perhaps in the following years he occasionally thought upon the matter but he give it no serious attention until ten years later when his budding hopes of discovering a new hormone were rudely crushed. The results of his experiments, he found, could be duplicated by the injection of such a non-specific substance as formaline.

His discouragement almost reached despair. For days he could accomplish nothing. Somehow, he felt, these changes so wide in scope, so definite, had meaning and as he continued to mediate upon the matter it dawned upon him that the non-specific changes he encountered were but the manifestation of the non-specific syndrome which he had called the "syndrome of just being sick."

From despair he turned to enthusiasm. He spoke of it to his colleagues but they discouraged him. He was, they said, embarked on a wild goose chase and his efforts would be more time wasted. More disappointment.

But with the courage of his convictions he persisted. From Sir Frederick Banting alone did he get a helpful encouraging word. Little by little, step by step, he formulated the idea and proved the mechanism of the General Adaptation Syn-

drome. And the seven lectures which comprise his book take the reader along the same path which Selye trod.

It is delightful reading—so clear, so interesting, so instructive. There is no excuse for anyone feeling at sea on the subject when Selye's "story" is available. And it is, moreover, one of the books which every medical man should read because Selye's concept is of such vast significance. The lectures are those which he has given to many medical audiences. In his Introduction Selye hopes that the informality of his presentation will be forgiven by the reader. Forgiven? That very informality gives the book its charm. The language is simple. Reading requires no effort. As the tale unfolds we are led step by step to the conclusion. Diagrams are added but are scarcely needed. Surely among medical books it must be the "Book of the Year."

**The Story of the Adaptation Syndrome** (told in the form of informal, illustrated lectures), by Hans Selye, M.D., Ph.D. (Prague), D.Sc. (McGill), F.R.S. (Canada). Professor and Director of the Institut de Medecine et de Chirurgie experimentales, Universite de Montreal. Acta, Inc., Medical Publishers, 4565, Decarie Boulevard, Montreal 29. P.Q. 225 pages with many diagrams, photographs and merco-photographs. Sent post paid for \$4.50.

### New Edition of Horner Manual Obtainable on Request

The second edition of the Horner Manual is now ready for distribution.

Prepared as a service to the medical and allied professions by Frank W. Horner Limited, Montreal, the Horner Manual compiles under one cover a wide range of data on the use and interpretation of laboratory aids to diagnosis.

This handy and durable pocket sized compendium is a ready reference for physiological normal values, blood chemistry, methods in hematology, functional tests of various organs, and the diagnosis and treatment of poisoning. Also included are procedures for the examination of gastric contents, seminal fluid, urine, and cerebrospinal fluid. The significance of abnormal findings is discussed for all tests.

The Horner Manual is the end product of many months' sorting, processing, and evaluating reams of data from innumerable sources. Data were weighted for accuracy and consistency with current clinical findings. As a result of valuable suggestions from the medical profession, data of a largely academic nature has been eliminated.

Physicians, medical students, nurses, and laboratory technicians may obtain a copy of the Horner Manual, free of charge, by writing to Frank W. Horner Limited, Box 6139, Montreal, Que.

*effective, well-tolerated, esthetically pleasing*  
**a two-year clinical study  
of a vaginal gel  
used without a diaphragm**

CLINICAL REPORT\*

704 PATIENTS

NORTH DAKOTA

**effective** "This study indicates that this preparation is more effective than any other method we know.\* \* \* During the two-year study of this Gel, conception was not effectively controlled in only 1.8% of the 704 patients who claimed regular use."

**well-tolerated** "All biopsy specimens, whether at six weeks, nine months, or sixteen months after the use of the Gel, show perfectly normal human vaginal mucosa . . . It would be difficult to find more nearly normal human vaginal biopsies."

**esthetically pleasing** "The enthusiasm with which this new method is received has convinced us that it is esthetically acceptable. The points: simplicity, ease of administration, convenience and satisfaction were expressed so emphatically and repeatedly by users that we are inclined to accept these judgments."

**for simple, effective control  
well-tolerated, esthetically pleasing**

*Preceptin*  
VAGINAL GEL

buffered at pH 4.5 — for optimal tolerance

PRECEPTIN vaginal gel — a major advance in conception control developed by Ortho Research Laboratories.



COMPOSITION: PRECEPTIN vaginal gel contains the active spermicidal agents p-Diisobutylphenoxypolyethoxyethanol and ricinoleic acid in a synthetic Gel base buffered at pH 4.5.

\* Hunter, G. Wilson; Darner, C. B., and Gillam, J. S.: A method of Contraception Without Diaphragm — A Two- Year Investigation. Ann. New York Acad. Sc. 54:825, 1952.

**ORTHO PHARMACEUTICAL CORPORATION (CANADA) LIMITED TORONTO**  
Manufacturers of Ortho-Gynol, Ortho Creme, Ortho Kit, Ortho Diaphragm.

## Manitoba Hospital Service Association

### The Excessive Use of Blue Cross Benefits

Kenneth B. Babcock, M.D.

**Admitting Patients to Hospital for Diagnosis Only.  
Complete Work-up Done After Patients Are  
Admitted Rather Than Before.**

**Using Hospital for Procedures That Can Be  
Performed at Home or in Doctors' Offices.**

In the past several years, particularly since Blue Cross began expanding at a rapid rate, it has become endangered by abuses which have caused excess utilization of its benefits. Specifically, such factors as unnecessary admissions, unnecessary use of diagnostic and treatment aids and unnecessarily long length of stay, have brought this about until today the danger is very real and widespread. And as additional hospitals are completed and more hospital beds are made available, the problem of excess utilization can become of even greater concern.

**Over-Usage of Drugs and Medications.**

**Over-Usage of Laboratory Tests.**

**Admitting Patients Too Late in the Day  
to Allow Work-Up and Laboratory Tests.**

In analyzing the situation, we find that abuses of Blue Cross stem from four major sources: Physicians, hospitals, patients themselves and Blue Cross itself. In many instances there is overlapping, for the existence of any abuse implies that at least two of the parties mentioned are guilty. But for easier understanding the abuses will be considered under the separate divisions.

### The Physician

**Delayed Test Reports and Delayed**

**Discharge of Patients.**

**Insufficient Review of House Orders.**

**Excessive Number of Expensive**

**Go-Home Prescriptions.**

The attending physician is the most intimately involved, for it is he who decides whether or not the patient is to be admitted to the hospital, what treatment he is to receive, and when he shall be discharged.

At our hospital an independent committee of five staff physicians audited charts for one month and noted the following criticisms of their own group:

1. Admittances for purely diagnostic purposes only. These admittances could easily have had their investigative studies done either at doctors' offices or as outpatients. Medical cases, such as allergy studies, anemias, colitis, gastro-intestinal

upset and headache were the worst offenders.

2. Patients receiving X-ray therapy or physiotherapy treatments in hospitals when they did not really require hospitalization. These were cases of hospitalization for convenience.

3. Patients receiving prolonged pre-operative medications and treatment. This was usually done to conform with the physician's operating schedule. Either the doctor was too busy to put the patient on the boarding when the patient was ready, and postponed it for his own convenience (especially true if the patient was given a late boarding which might conflict with office hours), or the doctor delayed the case because he operated at that particular hospital only on certain days due to other hospital affiliations.

4. Orthopedic patients with prolonged hospital stay even though they may be ambulatory. Some of these included a 27-day banjo splint on a finger, and a walking cast for Potts fracture of the ankle. Their defense was present day socioeconomic conditions, i.e., the patients lived in rooming houses, dormitories, or crowded homes.

5. Two odious abuses of overstay:

(a) Intestinal obstruction due to hemorrhoids. After the operation the patient was in the hospital 45 days. During this time the man's company temporarily went out on strike. Thus, besides Blue Cross paying his hospital bill, he received \$35 from unemployment insurance. He said, "Why not stay in the hospital? I can draw money and get free meals." His doctor had co-operated.

(b) The second was an acute ulcer case which required "complete bed rest" and "no visitors" written on the chart. But two lines below this requirement, the following was written: "Install telephone for business purposes. Allow secretary to visit for dictation purposes, not more than two hours in the morning and two hours in the afternoon." And below this it said, "Allow patient to be absent from hospital two hours Thursday to go downtown for business purposes."

6. Over-usage of medications. As an example, one patient was kept on penicillin and an expensive vitamin preparation every four hours for 14 days. The cancellation of drugs by the physician had been overlooked.

7. Unnecessary laboratory tests ordered. Slot machine diagnoses sometimes are made by staff physicians who desire to make an impression. They order all the laboratory tests in the book, hoping one will come up with a positive result. This can be classified as either laziness or plain ignorance.

8. Duplication of orders and tests on clinic outpatients. In these instances the attending physician is either forgetful or doesn't know that



this work had already been done prior to the patient's admission. Poor work-ups before admission also may be responsible for this abuse.

### The Hospital

About 90 per cent of all hospital administrators are laymen. They explain, "Who am I to investigate or criticize the medical staff for abuses." It is the administrator's duty, nevertheless, to encourage the medical staff to investigate themselves. Here are some specific situations which all hospitals should try to alleviate:

1. Late admissions, not allowing case work-up on the day of admission, resulting in an extra day of patient stay.

2. Delay due to bottlenecks in ancillary services in hospitals, especially during late afternoons and week-ends.

3. Delay in reporting tests. How many times have we heard, "My doctor says I can go home when he sees the results of the X-ray and laboratory tests." Sloppy or slow reporting means a delay of one or two days.

4. Delay in notification of discharge often results in an extra day of patient stay.

5. Excessive drug expense because of poor house orders. How long should a medication or treatment be given in a hospital without the order being rewritten?

6. Routine house orders. Are they really necessary? One hospital I know of has a standing order for an electrocardiographic test on every admittance. In Michigan, a blood test on obstetrical patients before admittance for delivery in a hospital is a legal requirement. Yet almost all hospitals, even though this legal requirement has been accomplished, perform a second routine blood test on obstetrical patients after they enter the hospital.

7. The abuse of allowing expensive prescriptions to be taken home, at the expense of Blue Cross. In most cases these prescriptions could be purchased from a pharmacy after the patient is discharged from the hospital.

### Patients Themselves

1. A typical case is the patient in for a herniorrhaphy who says to the doctor, "As long as I'm in here, how about an electrocardiogram to check my heart, or an X-ray picture of my stomach? Shoot the works, I have Blue Cross."

2. Another example is the patient who is ready to go home Thursday, but says, "Doctor, my husband is working and we need the money to live on and to pay your bill. I have no one to look after me. Can't I stay until Saturday when my husband isn't working? It doesn't cost me anything—I have Blue Cross."

3. The attitude of John Q. Public: "I have been paying into Blue Cross for three years and never got a cent out of it. Why can't I go to the hospital,

where it won't cost me anything, to have some tests made?"

If the doctor says "no" to any of these three cases mentioned, he makes the patient angry and perhaps loses him; if he says "yes," he is taking one step forward in killing the goose that is laying the golden egg.

### Blue Cross Itself

Even Blue Cross is guilty, particularly in two specific instances.

1. Poor, or incorrect advertising. Typical of Blue Cross ads are some which, if they do not say so in words, strongly imply, "We pay your complete hospital bill." Then they cite a five or eight thousand dollar cash payment, and state further, "Blue Cross pays for all operating room charges, laboratory tests, electrocardiograms, etc., etc." What they should, but do not say is, "You cannot come in for diagnosis only." "You can't stay an extra day because you are supposed to get only those things which are absolutely essential to the specific diagnosis."

Under analysis, it appears that Blue Cross is trying to carry water on both shoulders—implying that the sky is the limit on the one hand, and asking both physicians and hospitals to put up barriers and restrictions to stop over-usage and abuses on the other.

2. Ineffective appeals to governmental agencies. Blue Cross is not helping hospitals enough in fighting to get costs from governmental agencies. One of the few truthful and worthwhile statistics in the recent article on hospital costs in the American Magazine was a quoted average loss per patient per day of \$4.60 on all governmental agency cases in non-profit general hospitals in New York. This loss runs into millions of dollars per year in the United States and is subsidized by Blue Cross to the extent of coverage of its percentage of patients in such hospitals. Blue Cross must take greater interest in helping hospitals make government pay its share of the costs.

It is obvious that we have a far greater problem on our hands than is seen at first glance. As a list of positive efforts to correct these problems, the following recommendations are long overdue:

A restatement of the basic principle of Blue Cross . . . "an agreement with hospitals to take care of critical illnesses of their respective clients and patients." It is NOT an agreement to pay for diagnostic service and all tests desired by a patient. Blue Cross must watch very carefully, therefore, the adding of extra benefits, such as office surgery, public health measures, special considerations, and others which, though possibly not expensive in themselves, imply psychologically to the public that the function of Blue Cross is the subsidization of all health costs. Specific matters with which Blue Cross must educate, guide and help the

physicians and hospitals are:

1. Not admitting Blue Cross patients for diagnosis only.
2. Having a complete work-up done on patients BEFORE they are admitted.
3. Not using hospitals for procedures that can be performed outside.
4. Checking over-usage and over-medication of drugs.
5. Checking over-usage of laboratory requests. Physicians should be encouraged to consult with the pathologist to determine which tests the patient should have.
6. Changing the admitting hour to an earlier one.
7. Staggering working shifts in ancillary services, especially X-ray and laboratory.
8. Improving messenger service on reporting tests and discharges.
9. Reviewing house orders. The hospitals could set a 48 or a 56-hour time limit on all medications, after which the order must be rewritten. A good hospital drug formulary in the hands of the house staff can save both the hospital and Blue Cross thousands of dollars. Routine house orders for X-rays and EKG's should be forbidden.
10. Refusing to allow large go-home prescrip-

tions. No hospital pharmacy should dispense more than X number of tablets.

Aside from encouraging these basic policies, Blue Cross can and should do more to improve its own operation. This might include hiring a physician to do missionary work among other physicians and hospitals on "Abuses of Blue Cross." Another device could be a continuous education of both physician and patient, showing them how abuse through overuse hurts them much more in loss of beds and increased premiums than they realize. Blue Cross, also, must re-inspect and re-evaluate its own advertising of benefits. It should slant away from any implication that the sky is the limit.

Helping hospitals in their dealings with the governmental agencies which pay only partial costs of daily care is still another area where Blue Cross must do a job. And encouraging greater usage of visiting nurses, along with further investigation of home nursing service should be another matter for Blue Cross to consider. As our geriatrics problem increases, this will become more important.

All told, these problems are many, and their solution probably will take some time. But it cannot be done unless the hospitals, physicians, patients, and Blue Cross, too, all work together.

## Sale or Import of Isoniazid

Drug manufacturers, sanatoria and qualified investigators working in sanatoria are the only ones who may buy or import into Canada the recently-discovered drug for tuberculosis, isoniazid or isonicotinyl hydrazide, Federal Health Minister Paul Martin disclosed here today. This drug is marketed under a variety of trade names.

Officers and consultants of the department are not yet satisfied as to the safety of this drug in the treatment of tuberculosis, he said, and have placed these restrictions on its purchase or import lest it be used indiscriminately with harmful effects.

Mr. Martin defined "qualified investigators" as medical specialists in tuberculosis who work in sanatoria or hospitals with adequate facilities for clinical and laboratory evaluation of the drug and its action on tuberculous patients.

First use of this drug in the treatment of tuberculosis was announced from Sea View Hospital, New York, earlier this year. Reports of its usefulness have been cautiously optimistic, pending

further clinical trials to determine whether or not its effects are lasting, whether the tubercle bacillus develops resistance to it and whether it has any dangerous side effects.

The federal regulations prescribe that shipments of this drug in its finished form must be clearly labelled to show that they are for experimental use by qualified investigators only, and manufacturers and distributors must maintain records of distribution.

Officers of the food and drug divisions stated that if the new drug is put on a prescription basis or if other restrictive action is taken, new regulations will be issued before the end of September.

## Psychiatric Section of M.M.A.

The above Section will have a dinner in the Frontenac Room, Royal Alexandra Hotel, at 6.30 p.m., Wednesday, October 8, 1952.

*Introducing...*

# **Plexonal**

**a new and improved  
hypnotic and sedative**

- ▶ **RAPID EFFECT**—*Profound and restful sleep is quickly induced following the administration of 1-3 tablets  $\frac{1}{2}$  hour before bedtime.*
- ▶ **PROLONGED EFFECT**—*The various components of Plexonal act synergistically to produce long lasting sleep in spite of considerable reduction in the dose of each component.*
- ▶ **WELL TOLERATED**—*Plexonal does not cause any disagreeable secondary effects nor leave any feeling of drowsiness or "hangover".*
- ▶ **INDICATIONS**—*Insomnia caused by neurovegetative dystonia—Nervous irritability—Anxiety.*
- ▶ **COMPOSITION**—*Each coated tablet contains:*

<i>Sodium diethylbarbiturate (barbital)</i>	<i>45 mg.</i>
<i>Sodium phenylethylbarbiturate (phenobarbital)</i>	<i>15 mg.</i>
<i>Sodium allylisobutylbarbiturate (Sandoptal)</i>	<i>25 mg.</i>
<i>Dihydroergotamine methanesulfonate</i>	<i>0.16 mg.</i>
<i>Scopolamine hydrochloride</i>	<i>0.08 mg.</i>
- ▶ **GENERAL DOSAGE**—*As a hypnotic:*
  - 1-3 tablets  $\frac{1}{2}$  hour before bedtime.*
  - As a daytime sedative:*
  - 1 or 2 tablets 2 or 3 times daily.*
  - Maximum daily dosage: 8 tablets.*



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# **Department of Health and Public Welfare** **Comparisons Communicable Diseases — Manitoba (Whites and Indians)**

DISEASES	1952		1951		Total	
	June 15th to July 12, '52	May 18 to June 14, '52	June 17, to July 14, '51	May 20 to June 16, '51	Jan. 1 to July 12, '52	Jan. 1 to July 14, '51
Anterior Poliomyelitis	9	1	1	0	10	4
Chickenpox	131	167	106	179	850	1058
Diphtheria	1	0	0	0	2	5
Diarrhoea and Enteritis, under 1 yr.	6	5	8	14	58	88
Diphtheria Carriers	0	0	0	0	0	1
Dysentery—Amoebic	0	0	0	0	0	0
Dysentery—Bacillary	2	0	3	2	13	15
Erysipelas	1	1	4	4	9	18
Encephalitis	0	0	0	0	1	2
Influenza	5	24	3	8	109	766
Measles	155	172	158	190	950	2667
Measles—German	1	1	7	0	11	32
Meningococcal Meningitis	2	1	7	3	10	22
Mumps	93	77	48	106	390	1010
Ophthalmia Neonatorum	0	0	0	0	1	1
Puerperal Fever	0	0	0	0	1	0
Scarlet Fever	46	57	114	181	461	825
Septic Sore Throat	15	4	1	5	60	15
Smallpox	0	0	0	0	0	0
Tetanus	2	0	0	0	3	0
Trachoma	0	0	0	0	0	0
Tuberculosis	65	80	113	122	421	642
Typhoid Fever	0	0	1	0	0	2
Typhoid Paratyphoid	0	0	0	0	0	0
Typhoid Carriers	0	0	0	0	0	0
Undulant Fever	0	1	0	0	2	6
Whooping Cough	16	12	22	30	179	250
Gonorrhoea	106	104	139	79	691	657
Syphilis	10	9	8	13	67	95
Infectious Jaundice	4	4	0	0	24	0
Tularemia	1	2	0	0	3	0

Four-Week Period, June 15th to July 12th, 1952

DISEASES	*776,541 Manitoba	*861,000 Saskatchewan	*3,325,000 Ontario	*2,952,000 Minnesota
(White Cases Only)				
*Approximate population.				
Anterior Poliomyelitis	9	47	20	26
Chickenpox	131	152	1526	---
Diarrhoea & Enteritis, under 1 yr.	6	9	---	---
Diphtheria	1	1	1	---
Diphtheria Carriers	---	---	---	---
Dysentery—Amoebic	---	---	---	2
Dysentery—Bacillary	2	---	2	8
Encephalitis Epidemica	---	1	---	---
Erysipelas	1	1	2	---
Influenza	5	---	3	4
Infectious Jaundice	4	---	14	7
Malaria	---	1	---	9
Measles	155	183	1381	193
German Measles	1	64	419	---
Meningitis Meningococcus	2	2	10	3
Mumps	93	65	1051	---
Ophthal. Neonat.	---	---	---	---
Puerperal Fever	---	---	---	---
Rocky Mountain Spotted Fever	---	---	---	---
Scarlet Fever	46	42	78	39
Septic Sore Throat	15	29	1	7
Smallpox	---	---	---	---
Tetanus	2	2	---	---
Trachoma	---	---	---	---
Tularemia	1	---	1	2
Tuberculosis	65	42	92	182
Typhoid Fever	---	---	1	---
Typh. Para-Typhoid	---	---	5	1
Typhoid Carrier	---	---	---	---
Undulant Fever	---	1	3	7
Whooping Cough	16	28	94	18
Gonorrhoea	106	---	166	---
Syphilis	10	---	56	---
Trichonosis	---	---	---	1

## DEATHS FROM REPORTABLE DISEASES

For the Month of July, 1952

**Urban**—Cancer, 63; Pneumonia, Lobar (490) (491-493), 1; Pneumonia (other forms), 3; Acute Poliomyelitis, 2; Tuberculosis, 5. Other deaths under 1 year, 17. Other deaths over 1 year, 180. Stillbirths, 15. Total, 212.

**Rural**—Cancer, 26; Influenza, 1; Pneumonia, Lobar (490) 491-493), 1; Pneumonia (other forms), 1; Acute Poliomyelitis, 2; Tuberculosis, 3; Septicaemia and Pyaemia, 1; Measles, 1; Diarrhoea and Enteritis (under 1 year), 1. Other deaths under 1 year, 19. Other deaths over 1 year, 136. Stillbirths, 13. Total, 168.

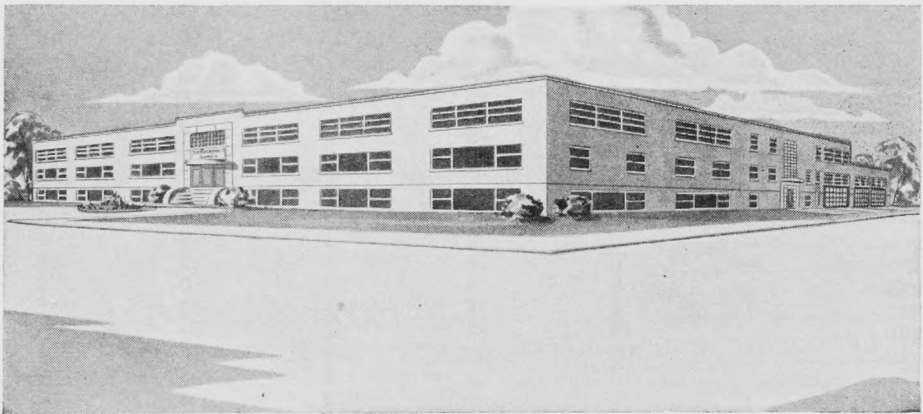
**Indians**—Deaths under 1 year, 1. Deaths over 1 year, 2. Total, 3.

**Poliomyelitis**—As at date of writing (August 8th) shows a total of 142 cases including 5 deaths so far this year. It is apparent that we are in an epidemic year. Some of the cases may be due to coxsackie virus and this is being checked.

**Chickenpox, Measles and Mumps** are decreasing to their usual levels.

**Tuberculosis** shows a lower incidence to date this year.

**Veneral Diseases**—Gonorrhoea—slight increase, and syphilis, a definite decrease.



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